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3D Lives!

Format remains relevant, but could be marketed better

3net / Storm Surfers

A camera crew films Tom Carroll at Secret Reef W.A. in 3D for 3net's "Storm Surfers."

INSIGHT FOCUS ON EDITING

BY JAY ANKENEY

Proclaiming "3D Is Dead!" has become a popular parlor game among broadcast and film industry pundits; so let me commit professional heresy by replying "Poppycock and Balderdash"!

True, in April the Fitch Ratings research film released its "Exhibitor Outlook and Analysis" report, which predicted that "3D box office figures are projected to drop in 2013, for the first time since 3D blew up in 2009."

That could be due to audience objections to paying a premium for 3D movies, but it could also be due to the fact that the summer of 2013 produced no "Avatar" or even an "Avengers."

3D, PAGE 32

HDMI 2.0 Primes 4K Market

Cable remains the same

BY PETER SICIU

BERLIN—The HDMI Forum last month unveiled HDMI 2.0, an upgrade of the consumer video standard that will support 4K video at 18 Gbps, enabling 2,160 progressive scan lines per frame—up from the 720 that comprise current HDTV—and frame rates of up to 60 frames per second. The current HDMI 1.4 could only transmit 4K with up to 30 frames per second.

HDMI, PAGE 8

More HDMI 2.0 products are expected by the International CES in January

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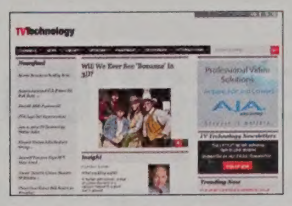

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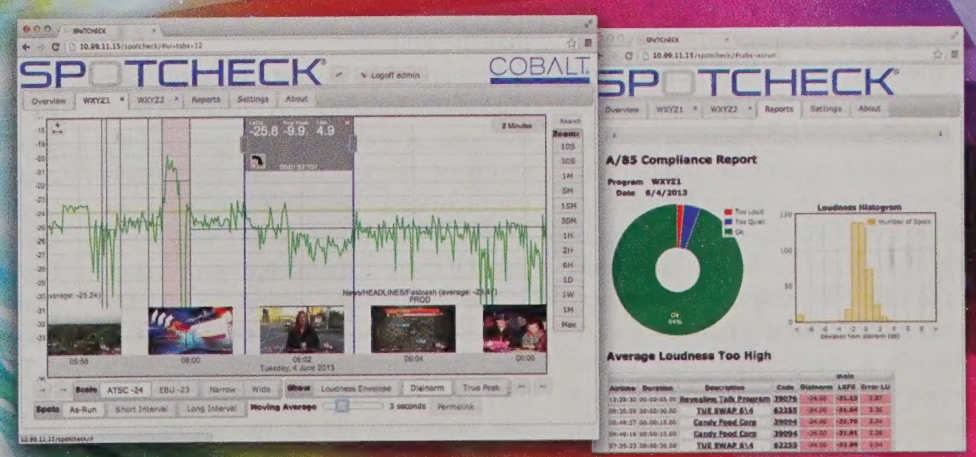

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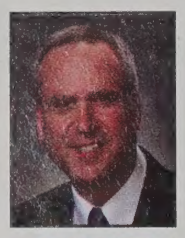
FROM THE EDITOR-IN-CHIEF

A Conversation With Gordon Smith



TOM BUTTS
EDITOR-IN-CHIEF
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To lawmakers on Capitol Hill and regulators in the halls of the FCC, (as well as its membership), Gordon Smith is the face of the U.S. broadcast industry. The former Oregon senator and now president of the National Association of Broadcasters has provided a clear, persistent and determined voice for radio and TV stations both large and small. His disciplined leadership over the past four years has helped our industry maintain a balanced and consistent presence despite continuous assaults in a rapidly changing regulatory environment and consumer marketplace where the rate of technological change more often than not, vastly outpaces the ability of lawmakers to respond. He's also a big advocate for moving broadcasting into the next phase of technology in which the ability of consumers to view video anywhere, anyplace, at anytime will dominate.

But while his focus remains on the American marketplace, he also represents U.S. broadcast interests to the world and he visited last month's IBC Show in Amsterdam to get a taste of how the show operates and to better understand the differences among regional broadcast marketplaces. I got a chance to sit down with him to discuss the latest issues affecting our industry.

The recent retransmission consent battle between CBS and Time Warner Cable was eventually resolved but not before a nasty public fight that laid bare the concerns about being justly compensated for the types of popular programming and information services that broadcasters provide. Despite the cable industry's arguments that the retransmission environment needs regulatory intervention, Smith indicated that the CBS-TWC dispute was the exception rather than the norm.

"This is a marketplace that works 99.9 percent of the time and that's not evidence of market failure," he said. "This is a marketplace that is finding its level and there are undoubtedly economic tensions that occasionally and rarely occur in shutdowns, but they get resolved because there's a mutuality of interests and vulnerabilities."

Smith added that with the concept of "equal jeopardy" where both sides have something to lose, broadcasters and cable share mutual interests. "We want cable to succeed," he said. "We think their packages are more valuable if they have our content, which is the most widely viewed. They conversely would have more trouble selling cable packages without local broadcast content."

The continuing controversy over the Aereo IP-based mobile video service, in which the New York company is retransmitting local broadcast signals without retransmission consent is still in litigation. The recent court decision shutting down the similar "Filmon.org" online video service means that the current judicial score stands at 2 to 1, with two courts deciding in NAB's favor, but Smith thinks the issue will eventually end up at the Supreme Court. But he also thinks that broadcasters should not stand still while waiting for a decision and that moving to a mobile future is vital, while remaining vigilant on the copyright issues that are at the heart of the concept of retransmission consent.

"We think, in the end, we will win in court and in the meantime, we are emphasizing the importance of mobile in broadcasting, otherwise you invite more and more into this space, and sort of give a 'green light' to their violating copyright law and we don't want that," he said.

Perhaps the biggest challenge during Smith's four years in office has been the issue of spectrum auctions and the ability of the NAB to lobby for protecting broadcast signal integrity. While he says he "would like to say yes" when asked if there are sufficient protections in the current FCC rules, he says the association "reserves the right" to make sure statutory protections are "faithfully observed" by the commission. He also thinks the debate has re-enforced the arguments of the superiority of broadcast technology over broadband.

"There's this unfortunate tendency to think of broadcasting as 'yesterday' and broadband as 'today and tomorrow,'" he said. "But broadband can never compete with broadcast when it comes to video, because its architecture is fundamentally inefficient as a conveyer of video. Ours becomes, therefore, essential as a medium for getting video to the masses, and in our case, it happens to be free, local, live and large."

Moving to ASTC 3.0 is vital to the future of the broadcast industry and Smith thinks the industry needs to pick up the pace. "I believe we're not moving fast enough to ATSC 3.0 or OFDM," he said. "I think broadcast is at a crossroads where it must decide if it's going to be a player in a mobile future."

That also means, for the current transition to the mobile ATSC standard, more broadcasters need to get on board. "I don't think we fully know now the economic opportunity that comes from mobile, so if the choice is mobile or not mobile and the value proposition today is 50/50, that's an incomplete consideration of how you ought to proceed on this; it's that perception that keeps this in slow motion. But notwithstanding the economic uncertainties, a 'no' decision is a decision to decline in the telecommunications space. A decision to invest and grow in the mobile space is a decision to hang onto the broadcasting space and I think that's hugely important."

> "I believe we're not moving fast enough to ATSC 3.0 or OFDM. I think broadcast is at a crossroads where it must decide if it's going to be a player in a mobile future."

I spoke to Smith early in his visit to the IBC Show, so he hadn't had a chance to formulate any opinion on how the two shows differ, but he added that the NAB is continuously exploring new ways to improve the annual spring event, and is not averse to borrowing an idea or two from other shows. "It's important that we stay on top of our game, as a show, because it's number one and we want to keep it that way," he said.

Finally, in response to a question about the association's recent announcement that it was moving its headquarters closer to Capitol Hill, Smith noted that because of the difficulties that come with Washington's notorious traffic when Congress is in session, he was very rarely ever able to travel to Dupont Circle (where NAB has its current headquarters), during his 12 years as a senator.

"It's time to move," he said.

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(USA only 8:30 a.m.-5 p.m. EST)
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TV Technology (ISSN: 0887-1701) is published semi-monthly with additional issues in April and May by NewBay Media LLC, 28 East 28th St 12th Floor, New York, NY 10016. Phone: 703-852-4600. FAX:703-852-4583. Periodicals postage paid at New York, NY 10199 and additional mailing offices. POSTMASTER: Send address changes to TV Technology, P.O. Box 848, Lowell, MA 01853. Copyright 2013 by NewBay Media LLC. All rights reserved.

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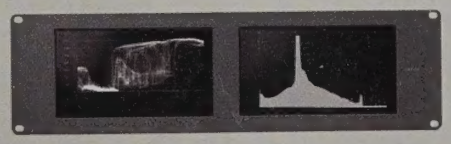

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IN THE NEWS

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SMPTE Adds 14 Fellows

WHITE PLAINS, N.Y.—SMPTE has awarded the fellow grade of membership to 14 industry leaders. The status is conferred upon those who have attained an outstanding rank among engineers or executives in relevant industries.

The new fellows will be inducted Oct. 23 at the Fellows Luncheon and further recognized Oct. 24, at the SMPTE Honors and Awards Ceremony. Both events are in conjunction with the SMPTE 2013 Annual Technical Conference and Exhibition at the Loews Hollywood Hotel.

This year's Fellows include:

- Paul R. Beck, Foxboro Cable Access
- Siegfried Foessel, Fraunhofer Institute for Integrated Circuits
- Paul Gardiner, former member of the U.K. Independent Broadcasting Authority
- Friedrich Gierlinger, IRT
- Douglas Greenfield, Dolby Laboratories
- George C. Hoover, NEP
- R. Norman Hurst, SRI International
- Chris Johns, BSkyB
- Pierre-Anthony Lemieux, Sandflow Consulting LLC
- David Siegler, Cox Media Group
- Theodore H. Szypulski, ESPN
- Steven D. Tiffen, The Tiffen Company
- James T. Whittlesey, Deluxe Digital Cinema
- Barry Bryan Zegel, CBS Television City

NAB to Move After 66 Years

WASHINGTON – The National Association of Broadcasters Board of Directors voted unanimously to pursue the relocation of a new NAB headquarters in the Capitol Hill/Capitol Riverfront section of Washington, D.C.

The NAB said the decision came as a result of months of strategic assessment on how best to improve NAB's advocacy efforts in Washington, and to diversify assets of the broadcast industry's principal trade association.

NAB's current headquarters in Dupont Circle in Washington, D.C.

The Federal Communications Commission, which was once in the NAB's neighborhood, is now at the Portals near the Riverfront area. NAB President and CEO Gordon Smith also mentioned that when he was Sen. Smith, there were times he did not make the trip to NAB headquarters because it was too hard to get there and back in time for a vote, according to NAB spokesman Dennis Wharton. The Riverfront and Capitol Hill areas are within walking distance of the Capitol and a short drive to the FCC.

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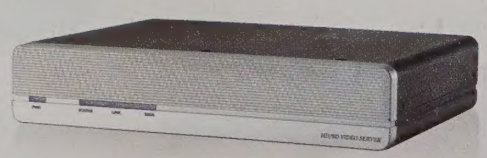

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TV Envy

BY DEBORAH D. MCADAMS

Silicon Valley has TV envy. The same digerati who deride the old school TV business would really like to be part of an old school TV business, or at least just like one.

Maybe it's locational. The Bay Area's beautiful and has major local software celebrities. But "L.A." rolls off the tongue like a sigh and has the Jolie-Pitts.

L.A. also now has the gold. It's in a suburb called "Burbank," where TV content rights live. They live there because that's where TV content and movies come from, and why Brad and Angie are up the hill. It's also why Barry Diller, and in a slightly more psychedelic way, Alki David, are trying to convince federal judges to let them resell TV content as if it were their own, without licensing the rights. Because it's worth a lot of money—like gold.

Gold's, what $1,350. an ounce? TV's what, $133,333 per second during the 2014 Super Bowl? Gold? (<_<) (>_>) TV. Hmmm. Tough one.

Except that while gold travels in tightly controlled networks and is of a solid nature that when taken is considered stolen, TV content is of a nonphysical nature and is distributed literally everywhere, in a way that nearly anyone can capture and reproduce. The ease of sharing and redistributing TV content so obscures what constitutes its theft that a media law degree is now worth its weight in TV seconds.

TV and movie makers have locked down the legal rights of their stuff as a result. This creates a relatively high hurdle for the profusion of nouveau distributors and software-based content enhancers, who respond by pressing for free access and usage while simultaneously courting the industry from whom they want to steal to adopt and deploy their technology.

That's why "TV everywhere" may not include your favorite show. Détente between new and old media is the only way it will.

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IN THE NEWS

HDMI

CONTINUED FROM PAGE 1

HDMI 2.0 will also support up 32 audio channels, along with support to 1,536 kHz audio sample frequency, yet is backwards-compatible with previous versions of HDMI, and will even utilize the same Category 2 cables and connectors. For consumers this means no new cables to buy, and no rewiring.

MORE BANDWIDTH

"It is very similar to other upgrades that we've had," said Steve Venuti, president of HDMI Licensing. "The cable is the same, so the [Category 2] high-speed cable from 1.3 will work with the higher bandwidth of 2.0 and with no change to the connector."

> "By all appearances we will see 2.0 in many devices by the end of the year."
>
> —Peter Fannon
> Panasonic

What it could offer viewers at home is a new way to engage with content. "It does allow for new ways of consuming media," said Venuti. "This includes the ability to see two screens at one time—which could be useful in video games. Applications like this require more bandwidth, and HDMI 2.0 can support dual screen and dual audio through a single cable."

Consumer electronics makers took little time to get on board with HDMI 2.0 and Panasonic announced its first entry into the 4K space at IFA. The TH-L65WT600A LED LCD Viera will arrive at retail in October and will support HDMI 2.0 at 60fps.

"As a founder and developer of the HDMI standard, Panasonic was pleased to see the new standard come together so quickly to support full 4K Ultra-HD and the bandwidth needed in consumer products," said Peter Fannon, vice president of Technology Policy at Panasonic Corp. of North America. "HDMI 2.0 is the future-proof connector for today's new 4K UltraHD TVs. For this reason, you can be sure that Panasonic will include HDMI 2.0 on many products going forward."

It is expected that by January's CES other manufacturers will be lining up sets that support HDMI 2.0. "We're at the forefront of UHD and 4K and getting HDMI 2.0 in place is crucial," said Brian Markwalter, vice president of research and standards at the Consumer Electronics Association. "By all appearances we will see 2.0 in many devices by the end of the year."

With products in the pipeline and the need not to replace existing cables, it could make it an easy upgrade for consumers, and potentially even the pros who use HDMI in their daily production workflow. "HDMI was always a consumer interface, but as it became an everywhere cable it filtered into the pro and broadcast space," added Venuti. "We see HDMI moving into Hollywood where it is being used more and more due to its price point."

"That has been one of the reasons this has been so anticipated," agreed Markwalter. "This is clearly why the industry has been so anxious."

NOT FAR ENOUGH

However, not all are in agreement that the technology goes far enough. While it means less standards to support and a move to universal cable, HDMI has a few notable issues that could keep the pros from truly embracing it. HDMI 2.0 does not define power over the link, nor does it provide a means of locking the cable into a device—which can certainly be a problem in the field.

There are even issues that could limit HDMI's longevity in the consumer space. "The problem with 2.0 is that it does go far enough," said Peter Putman, president of ROAM Consulting. "It took two years to develop this standard and it is kind of disappointing that the time was spent only to be caught up with Display Port, which is already pushing past this."

Putman added that HDMI 2.0 is thus not going to be breakthrough that the industry had expected, and at least not when it comes to the development of high dynamic range (HDR) video and movie content. "To me it is like they remodeled the house or souped up the car, but there is still something missing. It can handle two streams at once, but that's just a bitrate issue. That is good, but this isn't really good enough.

"Every camera and monitor today has an HDMI port, and a lot has been done to make it better," Putman added. "But [the HDMI Forum] really didn't push the envelope. There is talk of broadcasting down the road on 8K on a limited space, so they should have thought ahead. Now we're going to have to see the next update in just a couple of years."

HDMI 2.0 for 4K Workflow

While HMDI 2.0 has been touted as a way to streamline video consumption and production to a single cable on the production side there hasn't been the resounding approval that the HDMI Forum likely was expecting.

"HDMI is really consumer hardware," said Bruce Devlin, chief technology officer at Amberfin. "It is a much neater experience, and it also has the potential to allow for a compact software ecosystem. But it remains a question of scale, and as it is an off-the-shelf product it allows for a lower price point."

However, when compared to the myriad of cables and standards that currently exist, it lacks both the range and bandwidth that is already available; HDMI 2.0 might find a limited use with professional editing and graphics. "It still has compression in it so it is more of an output than a workflow connector," said Fred Lahey, director of the Colorado Film School. However, "HDMI 2.0 could be a way to drive consumer adoption of 4K as a format, which in turn drives the need for 4K production."

It is also a matter of compression, something that consumers deal with all the time, but whereas the pros need to work within an uncompressed environment. However, the ability to streamline via HDMI 2.0 could still be appealing.

"In a post capture it doesn't matter if you are viewing in a compressed state," said industry consultant Mark Darlow. "The industry captures in myriad formats and distributes via myriad of formats. The 4K workflow could allow this to become simpler and this could bring down the barriers of entry as there are fewer boxes to deal with."

It could also push the adoption of 4K. "In five years time we could very well be looking at 4K video instead of Blu-ray," added Darlow. "That could make the industry very different than what it is today, and fundamentally it should simplify the workflow for anything that had to go through—from capturing to viewing."

Peter Siciu

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ESPN Goes All-LED for US Open

Sports network cites temperatures, virtual 'instant on'

BY CLAUDIA KIENZLE

NEW YORK—For the first time in its US Open coverage, ESPN built an all-LED lighting infrastructure for its outdoor sets.

The sports network commissioned New York-based Ferri Lighting Design & Associates to provide lighting design and direction services for the fourth and final Grand Slam tennis event, which took place at the USTA Billie Jean King National Tennis Center/Arthur Ashe Stadium.

"With this year's lighting, there were no compromises," said Mick Smith, FLDA's lighting designer and director responsible for ESPN lighting setups at US Open Tennis. "We were able to use LED lighting to properly light outdoor sets even at the brightest part of the day. That's something that's only happened recently as LED fixtures—and the ability to control them—have gotten significantly better.

"Since we wanted to have the open plaza and venue in the background, we didn't put a scrim or panel behind the talent," Smith continued. "The challenge at this event is that lighting conditions range from extremely sunny to overcast and from high noon to nearly midnight. So you need to have adequate lighting to achieve the right exposure and light levels as well as a very flexible lighting setup to manage changes in light levels."

LIGHTING SUNNY SETS

FLDA lit three set areas at Arthur Ashe stadium: the ESPN domestic stage (also known as the "Fountain Plaza" set) at the stadium entrance that featured a desk for four commentators; a separate ESPN international set outside the stadium which also had a desk for four commentators; and Suite 200, a balcony/press box where anchors stood facing the interior with the tennis courts in the background. Located in Flushing/Queens, New York, the USTA National Tennis Center/Arthur Ashe Stadium has 12 tennis courts and seats 23,200.

"Since this is an outdoor venue, we needed to light the talent at ridiculously high foot candle settings to compensate for the backgrounds," said Bruce Ferri, president and senior lighting designer for FLDA. "Two years ago we needed to use HMIs because they were the only suitable solution out there, but if there was a heat wave, the set would feel unbearably hot for the talent. The key advantage to LED lighting is that we can turn them off when the talent isn't on-camera and get the LED lights on quickly when the director wants to throw it back to them."

This is a significant improvement over HMI lighting because the HMI's would require about three to six minutes to heat up to the proper color temperature, while the LED's are virtually instant on, Ferri said.

"Since the director could go to the anchors live at any time, we couldn't afford to turn the HMI's off and as a result, the talent would become extremely uncomfortable and fatigued sitting under those hot lights, especially in the sunny 95-plus degree weather typical for the US Open," Ferri said. "LEDs definitely kept the talent and set cooler this year."

LIGHTNING FAST

Chris Strong, ESPN technical manager overseeing the four majors of the Grand Slam including the US Open, agrees that the importance of LEDs in this outdoor venue is greatly due to the quest of reducing heat around the set and the need to bring them from an off state to full power quickly. "Other forms of lighting cast a fair amount of heat and with the summer temperatures in the 90-plus range, we needed every edge to reduce the heat on the set," Strong said. "As with any outdoor venue, LED lighting

LED, PAGE 12

ESPN commissioned New York-based Ferri Lighting Design & Associates to design and build its first all-LED outdoor studio at this year's US Open.

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IN THE NEWS

LED

CONTINUED FROM PAGE 10

is always questionable as the sun is hard to deal with. Though HMIs have always been the best option for outdoor lighting, LEDs have come a long way in a short time."

Strong added that LEDs now are able to match the capability of HMIs, with the advent of focused LED lenses and higher output instruments.

"The bonus is you can add a second or third [unit] due to size and power consumption should you still require more punch," he said. "They're also very quick to 'bring up,' something not as easy to do with HMIs or other forms of light. Aesthetically the lights also gave Ferri a quick handle on colors, [and] if the director wanted to warm up the stage, it took seconds to do it. If they wanted to color the lights in another direction, that was doable as well. Ease and quickness of doing this was key and thus gave our set a better look."

According to Pat Grosswendt, co-founder and chief technical consultant for the Americas for Litepanels in Van Nuys, Calif.—the manufacturer of Sola 4 LEDs used to light US Open sets—"LEDs are cooler because the heat they generate is not projected forwards toward the talent. The heat's dissipated away from the fixture by fans, heat sinks, or other means designed to keep the fixture cool."

In addition to the Litepanels Sola 4 fixtures, Ferri used Robe Robin 600 Led Daylight Wash; Chroma-Q Studio Force D XT; Prism Reveal Profile Junior Daylight; Color Kinetics IW Blast 12-inch TR; Aadyn Punch, and Aadyn Jab fixtures. They also used ETC Ion 2000 lighting control systems to set up and adjust the lights on both the ESPN domestic and international sets. The ETC Ion systems, one of which was situated in a shady spot underneath the main stage (in Fountain Plaza), offers the ability to preprogram lighting pre-sets for easier live operation.

"As lighting conditions changed, we often fine-tuned the LED light levels while shots were live without impeding the broadcast," said Smith. "The ETC Ion 2000 lighting controller has a very user-friendly touchscreen interface to control all the LED lights on the set. But I also set up a wireless network and brought out an iPad so that I could remotely operate the controller to adjust and focus the lights from the stage without having to run up and down or climb a ladder."

> "The challenge at this event is that lighting conditions range from extremely sunny to overcast and from high noon to nearly midnight."
>
> —Mick Smith, FLDA

DEFINITE TREND

According to Ferri, at least 50 percent of FLDA's business is LED-related, including installing new LED fixtures as well as replacing conventional lighting with LEDs.

"Converting to LED lighting is definitely a trend in broadcast studios," Ferri said. "One of the key incentives is that LED lighting uses a fraction of electricity compared to conventional lighting. In a brand new installation, a studio can see a return on investment in just two years by saving on HVAC construction and operating costs," said Ferri. However, the ROI for an established studio converting to LED fixtures would take longer because they would already have committed to a high level of HVAC and electrical service.

FLDA handles much of ESPN's studio lighting needs, including the new Sports Center building at the network's Bristol, Conn. headquarters, as well as their Miami, Charlotte, S.C., Los Angeles and Mexico City studios. FLDA also designed the lighting for ESPN's traveling NASCAR set ("The Pit Studio") that is also all LED.

"Since the advent of the technology, the broadcast industry's transition to LED lighting is now moving at a faster pace due to advancements in the quality, performance and energy efficiency of LED lights, according Litepanels' Grosswendt. "Our LED products don't have contaminants like mercury and all of the components are recyclable. And the fact that today's LEDs can create high-quality lighting very efficiently makes it very advantageous, appealing, and planet-friendly."

FLDA Lighting Directors Jeff McRoberts and Kevin McCarthy also worked on designing and building the all-LED set.

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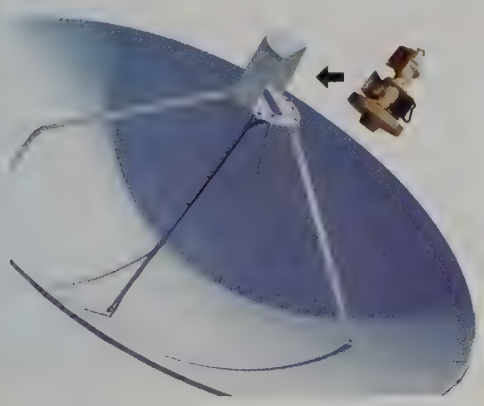

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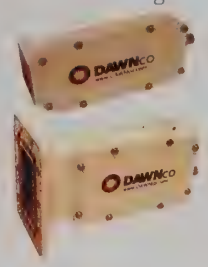

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AES to Focus on Audio in a Multi-Device World

Event will cover audio for 4KTV and session on Superstorm Sandy response

BY STEVE HARVEY

NEW YORK—The Audio Engineering Society will bring its "big tent" approach to all things sound-related when the annual U.S. convention rolls into the Javits Center in New York City, Oct. 17–20. Judging by the recent audio product launches at last month's IBC Show, there will be plenty for broadcasters to look at in New York.

NEW PRODUCTS

New mixing console developments will be at the forefront. Calrec will debut its Callisto Bluefin2-based live broadcast console, a simplified version of its larger desks. Callisto is available in fixed 32- or 44-fader versions, and channel strips feature only the essential mechanical controls.

Solid State Logic will show off new software for its C100 HDS and C10 HD consoles, adding significant workflow efficiencies to both desks. Either system may also be configured with a new multichannel loudness metering system, LMS-16, developed with Nugen Audio. SSL's new MADI-Dante Bridge is reportedly the world's first broadcast specification bridge between the multichannel transport standard and Audinate's IP audio network.

Studer has added Lexicon effects to the Vista 1 console via an integrated VistaFX engine that adds eight processors. A collaboration with Riedel brings a 10,000 x 10,000-plus routing system to Studer desks via a new proprietary A-Link digital interface.

Calrec will debut its Callisto Bluefin2-based live broadcast console at AES

A must-see will be Avid's S6 console, which offers a customizable hardware layout and can operate up to eight Eucon-enabled DAWs simultaneously.

CONTINUING EDUCATION

Meanwhile, away from the exhibit floor, this year's four-day schedule of themed sessions and other programming will offer plenty of interest to broadcasters.

The Broadcast and Streaming sessions program, chaired for the 27th year by David Bialik, will once again assemble a panel of experts to discuss the global state of TV loudness. Chaired by Fred Willard, chief engineer at Univision Communications in Washington, D.C., the panel will include representatives from ORF-Austrian TV and Fraunhofer as well as product manufacturers DTS, Linear Acoustic, Orban, RTW and TC Electronic.

With all eyes seemingly focused on 4K, touted as the "next big thing" for television, Bialik, who is also project manager for streaming operations at CBS Radio in New York, has put together a panel that will contemplate how audio might enhance the Ultra HD experience. Jonathan Abrams of Nutmeg Post in New York will chair the session, "Audio for 4K TV." Both the loudness and 4K audio events will take place Thursday, Oct. 17, starting at 9 a.m.

In addition to any potential improvements in the resolution and quality of the audio that might accompany a higher-resolution picture, some have also advocated for various so-called "3D audio" schemes—multichannel surround sound with a height component. Japan's NHK has experimented with a 22.2-channel format for years, but cinema audio formats might also present a way forward. Brian McCarty, who is liaising with SMPTE to spearhead an AES initiative to update the cinema audio standard, will chair a session entitled "Creative Dimension of Immersive Sound - Sound in 3D," that will discuss the strengths, limitations and future potential of both object-based and channel-based methods. McCarty is the managing director of Australian-based Coral Sea Studios.

"Audio Production and Distribution in an Evolving Program Delivery Landscape" will debate the impact on television audio of object-oriented, mobile and OTT streaming formats.

With companies such as DTS now offering personal "3D audio" playback via its Headphone:X product, multichannel surround film formats could potentially port over to mobile platforms.

"Mobile is where it's at," said Bialik, who has organized two panels, "Content Delivery and the Mobile Initiative" and "Audio for Mobile TV," that will discuss the topic. "These should be great panels."

DIVERGING PATHS

Some of those involved in those panels, including Linear Acoustic President Tim Carroll and Jim Starzynski, director and principle audio engineer for NBCUniversal, are also scheduled to participate in a

AES, PAGE 16

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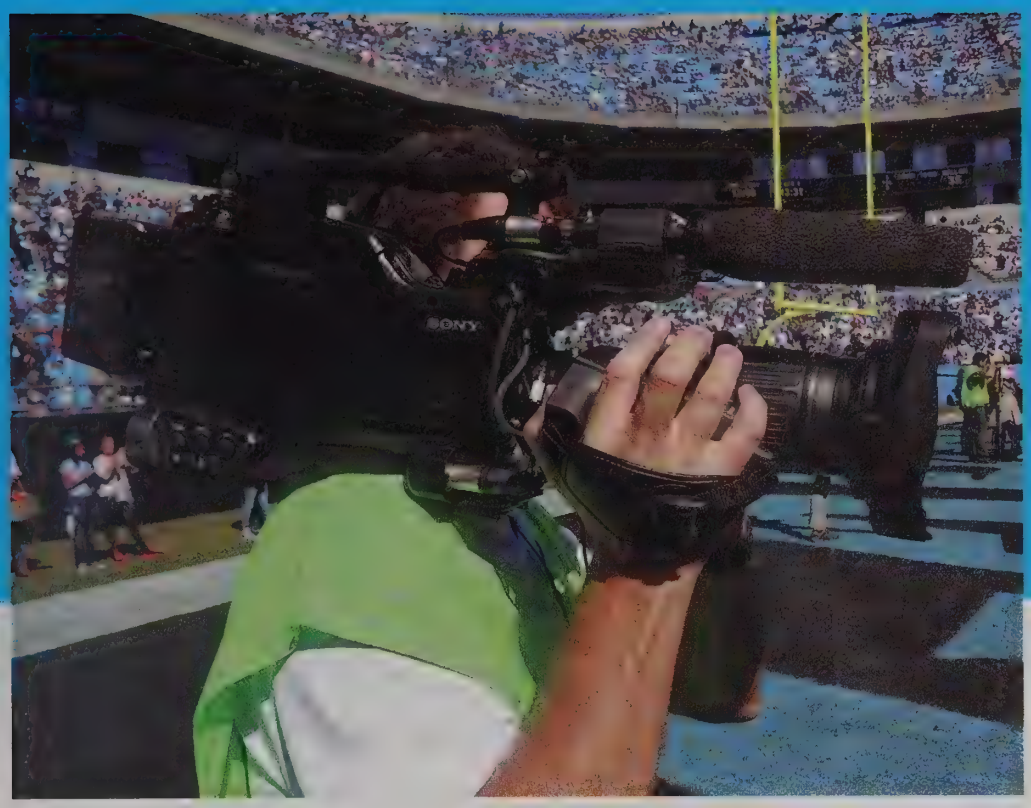

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IN THE NEWS

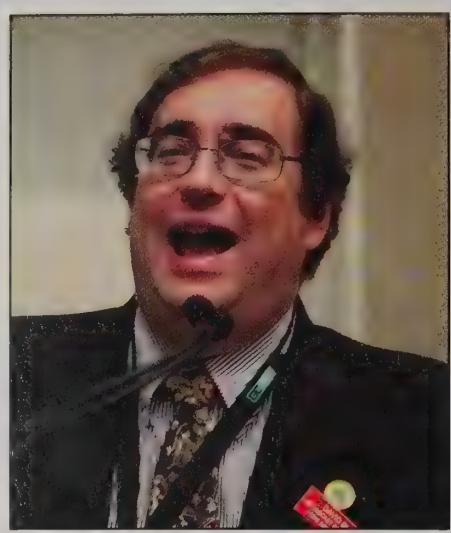
AES

CONTINUED FROM PAGE 14

four-hour AES special event produced by the DTV Audio Group, "Audio Production and Distribution in an Evolving Program Delivery Landscape." The forum, open to all AES attendees, will debate the impact on television audio of object-oriented, mobile and OTT streaming formats, and the long-term implications of the grab by telecommunications companies for more wireless bandwidth.

According to Roger Charlesworth, executive director of the DTV Audio Group, the path to audio delivery on mobile platforms is diverging. On one hand, it could offer high-quality, multichannel sound based on cinema formats. On the other, the requirement to deliver to mobile platforms could easily drive down audio quality.

"The demand for more sophisticated interactive and object-oriented services on next-generation streaming appliances, and the transition to streaming of highly sophisticated cinema formats at the very high end, are directly at odds with the common perception that television audio now needs to be dumbed down for mobile and desktop streaming," he said.



David Bialik chairs this year's Broadcast and Streaming sessions program at AES.

The panel "TVBDs, Geo-Location Databases, and Upcoming Spectrum Auctions," will feature a panel of experts from the FCC, location database Spectrum Bridge, wireless audio equipment manufacturers and consultants, and will address the assault on the frequency spectrum. Having lost access to the 700 MHz band, and with the 600 MHz spectrum now likely to be auctioned off, wireless audio equipment is being squeezed into less and less bandwidth (See "Wireless Mic Users Unite," Sept. 4). This panel will offer tips and techniques for anyone operating RF audio gear professionally to survive the shrinking spectrum.

An interesting case study, "Broadcasting During a Disaster," will look at how broadcasters managed to stay on-air when Superstorm Sandy hit the Northeast last year. Panelists from CBS, ABC/Disney and WADO/Univision will relate how they weathered the storm and fulfilled their roles as "first informers."

Acoustic treatment can be a last-minute thought in broadcast facility design and construction. John Storyk, Walters-Storyk Design Group, and Jim Servies, ESPN, along with moderator Sergio Molho, WSDG, will offer two case studies. ESPN's new Bridgeport, Conn. production complex represents the ideal, where acousticians were engaged at the earliest possible opportunity. At the opposite end of the scale, QTV in Doha, Qatar had to take corrective measures after building a new broadcast production complex that was found to have excessive reverberation and other acoustic problems.

Avid's S6 console offers a customizable hardware layout and can operate up to eight Eucon-enabled DAWs simultaneously.

Finally, a guilty pleasure: "Sound for Reality Television - Reality is Hard Work" will investigate the challenges of capturing, post-producing and mixing audio in a genre that everybody claims they don't watch but obviously do, if the viewing figures are to be believed.

To register for AES, visit *www.aes.org*.

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The Challenges of IPTV System Testing

More devices in the signal chain mean more monitoring

BY WES SIMPSON

ORANGE, CONN.—Over-the-air DTV transmitters are relatively easy to test, at least with respect to the integrity of the outgoing video stream. Once the RF signal radiates from the antenna, impairments to the digital stream come from physical-layer phenomena, such as loss, noise, and reflections. The same is true for satellite broadcasts, and an also applies to some extent for CATV systems.

In contrast, an IPTV delivery system consists of a number of active devices (routers, switches, etc.) between the signal origin and the viewer's receiver. Any of these devices along the way can cause impairments to the IP video stream without leaving any trace of an issue at the physical layer when it reaches the consumer. Fig. 1 compares the number of test points (shown as red circles) required for three different video distribution architectures, showing how IPTV systems may require monitoring at a number of intermediate points along the path to the viewer.

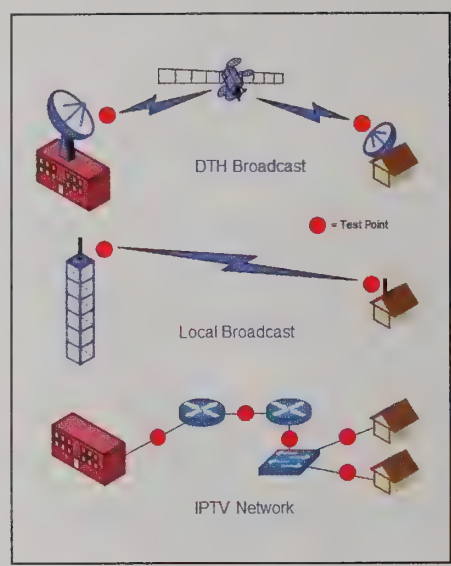

Fig. 1: Comparison of useful test points for three video delivery architectures.

Another complication is the fact that IPTV streams are usually single program transport streams that are sent individually through a network whereas other systems such as CATV rely heavily on multiprogram transport streams. This fragmentation creates more streams that need to be tested, and reduces the value of comparing different streams, further intensifying the testing problem.

TYPES OF TESTING

Physical layer testing looks at the cables, fibers, or other transport medium and the electrical or optical signals that ride on them. These tests typically measure parameters such as BER (Bit Error Rate/Ratio), jitter and latency. Physical layer tests can determine if a particular connection between two devices is faulty or suffering from interference, or if the devices on either end are causing errors.

Network layer testing deals with the Ethernet data frames that are travelling between devices on the network. Monitoring can determine if frames are being corrupted and need to be discarded, and if traffic levels are within the limits of the physical connection. Tests can also be done to determine if multicast packets are being correctly forwarded by switches using IGMP (Internet Group Management Protocol) snooping.

IP layer monitoring looks at IP packets, both collectively and within individual streams. End-to-end addressing can be validated alongside the ability of the network to correctly handle multicast join and leave requests. Packet loss, network latency, and packet jitter are also important parameters to monitor.

Video and audio testing can be performed at the application layer, both in the compressed domain and after the streams have been decoded. This type of testing can help determine if the video data is complete and in the proper syntax, whether audio loudness limits are being followed, and whether the all-important MPEG PCR (Program Clock Reference) is being properly carried along the path.

"Monitoring PCR clock behavior in an MPEG stream as it passes through various portions of a network acts as a fingerprint that can be used to perform forensic analysis of performance issues," said Karl Kuhn, senior video applications engineer for Tektronix, in Beaverton, Ore. "If the PCR is smooth and well-behaved, then the network is doing a good job in transporting the MPEG stream. If the PCR is varying in a periodic, sinusoidal manner, then the prime suspect is in the RF transmission domain. If the PCR is experiencing random, sharp discontinuities, then IP network packet loss and excessive packet jitter are the likely culprits."

Karl Kuhn

IPTV systems can create difficulties for performance monitoring and troubleshooting because of the large number of routers and switches which must be configured correctly and operate properly. Such devices can create subtle downstream faults that can be hard to localize because they may only occur when certain traffic patterns are present.

"Modern service providers need to monitor transport system behavior at multiple locations throughout the network and look at both data delivery statistics as well as video and audio signal quality," said Joel Daly, director of product management for IneoQuest Technologies, a Mansfield, Mass.-based provider of video quality and service

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> "Modern service providers need to monitor transport system behavior at multiple locations throughout the network and look at both data delivery statistics as well as video and audio signal quality."
>
> —Joel Daly, IneoQuest

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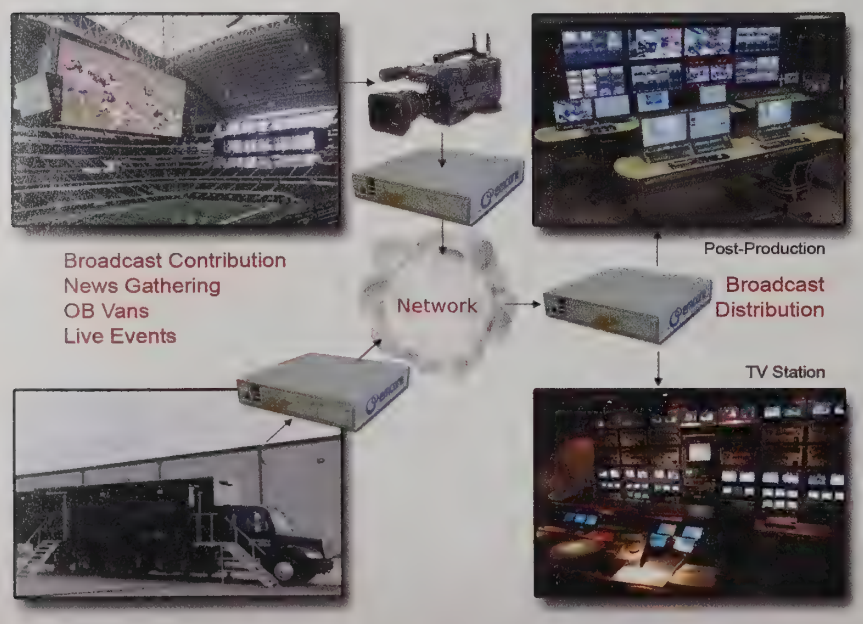

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Monitors: Beyond What the Eye Can See

Vendors add a range of features

BY PETER SICIU

NEW YORK—Seeing is usually believing, except when it comes to measuring accuracy on a professional monitor. In these cases the monitor can now provide accuracy that goes well beyond what can be "eye balled." Yet, even when the user is able to judge by eye alone, this doesn't necessarily carry over to other monitors.

"Many depend on their eyes for a certain 'look,'" said Russ Walker, director of strategic planning and business development at Marshall Electronics in El Segundo, Calif. "However they also want to duplicate that look on another day and likely on another monitor."

With the market now broken into several segments, including TV and cable production along with video production and post-production, many different users are looking at the same professional monitors but all with very different eyes.

> "Built-in monitor features such as waveform are really helpful in the field with small monitors where it is not practical to take some of the external calibration tools."
> —Nicholas E. Dugger
> Tennessee Digital Video

"This now requires functions to duplicate the monitor settings," Walker told TV Technology. "This is most often done with LUTs [look up tables] that are a series of numeric values that manage gamma, brightness, contrast, primary and secondary color points etc. This kind of functionality is found in so-called 'grade 1' monitors. This level of monitor also needs to be capable of 'field calibration.'"

In addition Walker noted that there are large segments of customers who do not need this much capability and they rely on many of the pre-set values in the monitor such as gamma settings, brightness and contrast. In these situations budget and customer sophistication are the primary drivers in how much functionality is required and actually used.

Plura's SFP-3G Series

"Monitors that do it all are more costly as the firmware is more sophisticated and the high-grade panels cost more as well," Walker added. "We are working to offer choice in price points and capability."

FEATURE SET

To ensure that the end user can get just the right picture, Plura, a Phoenix-based provider of professional monitors, now offers monitors that include LKFS audio loudless measurements, built-in precise waveform and vector and display video payload identification (VPID) as well as 16 channel audio metering with different scales.

The SFP-3G Series, which Plura introduced at the NAB Show in April, further offers a 6 x 6 built-in cross point switcher, pixel to pixel mode, and internal pattern generator as well as digital audio decoding.

JVC provides a range of functionality in its professional monitors, including 3G ATSI input capability, waveform scope and 16-channel audio metering. Its new 17-inch studio model offers a mercury-free RGB LED backlight.

The 17-inch studio monitor offers 10-bit processing capacity, according to Craig Yanagi, JVC's national marketing and brand manager. "It enables a precise 709 gamut mode, making it a default monitor for accurate color imagery," he said. "It also offers a wide gamut mode that covers 110 percent of the NTSC color space."

These smaller monitors uses are not just limited to the studio either. "Those built-in monitor features such as waveform are really helpful in the field with small monitors where it is not practical to take some of the external calibration tools," said Nicholas E. Dugger, president of Tennessee Digital Video in Nashville. "Some of those included features are very helpful and we take advantage of those in the field."

Panasonic's 31-inch BT-4LH310 LCD Production Monitor

DIFFERENT TOOLS

TVLogic offers users different tools to measure exposure and focus. "These are not uncommon tools to find, and these are fairly ubiquitous across our product line," said Wes Donahue, director of sales and marketing at Preco, TV Logic's U.S. distributor. "All of the monitors on the mid-to-high-end have quite the same feature sets that include vectorscope and waveform and focus assist."

Waveform functionality allows users to check the exposure as they are shooting. "There is a lot of choice depending on what the user needs," Donahue added. "Audio level metering is enabled on the screen, and that is another feature that can come in handy for many users. Some of the monitors on the higher-end offer side-by-side picture and picture, and this can come in very handy when matching cameras."

In addition, TVLogic's monitors can be auto calibrated, and many of the models now feature a built-in 3D look up table.

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IPTV

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assurance technology. "This requires a system that can gather large amounts of data from multiple sources, including test probes installed at critical locations in the network, reports from system operators who are monitoring signals, and inquiries from users who are experiencing troubles.

"Large multichannel video programming distributors are currently busy building large data analysis systems that can look at current network status and historical trends to more accurately spot problems as they arise, and to anticipate where failures could happen in the future before they occur," he added.

INSIDE THE STUDIO

As broadcast studios move towards greater use of IP/Ethernet infrastructure, testing live, in-service video streams will become increasingly important. Broadcasters must ensure that link capacities are not exceeded and that packet buffers limits are not violated. IP routers and switches must provide detailed information about their current configuration and performance, and will need a mechanism to reserve bandwidth for specific flows. In addition, network probes will likely be needed to monitor system traffic and provide independent data to sectionalize faults, along with a management system to analyze data from multiple sources.

IP networks offer many benefits for broadcasters, including speed, cost reduction, and flexibility. Harnessing this power requires the ability to analyze system performance across several network layers and to gather data at multiple points along each network path. Fortunately, new technologies are being developed today to meet these challenges.

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The Changing Face of Test and Measurement

New signal paths, regulations require new products, methods

BY JOEY GILL

PADUCAH, KY.—We all know how fast this industry is changing, especially the technology.

Although broadcasters' goals haven't changed (to provide viewers with the best pictures, best sound, best services, and the best overall viewing experience), over the past decade, the means to this end most certainly has. Equipment features and quality are at an all time high, and equipment reliability is arguably on the same plane.

While the reliability and quality of the equipment is high, many broadcasters might not have their focus in the test and measurement arena these days, at least until something goes wrong. Keeping pace with today's technology surely means adopting new methods and knowledge for troubleshooting, but some things remain the same. Let's take a look at some old classic test gear that still passes muster, some new technologies that shine, and how test and measurement in general has changed in the past few years.

ACQUISITION: STUDIO AND FIELD

In the field—as well as in the studio—video all starts with the camera. These days for broadcasters, it could just as easily be the DSLR used in the field as a "traditional" camera. While today's cameras make better pictures than ever, one item that has hit the "high popularity" list is the warm card for white balancing. The slightly blue cards seem to make modern cameras have that old "tube" warm look when used.

> "[Broadcasters'] interest was focused on physical infrastructure and engineering compliance, whereas now, their focus is on regulatory compliance, and lower cost."
> —Richard Duvall, Tektronix

For more staged field production, and in the studio, the tried and true color test charts, such as the DSC Labs Chroma DuMonde are still the benchmark for getting cameras to match. Of course, the chart would be useless without some type of waveform monitor, or an SDI analyzer, according to Ian Valentine, business director, Video Product Line at Tektronix in Beaverton, Ore.

"An SDI analyzer [waveform monitor] continues to be the main workhorse in broadcast environments," he said.

For field audio, small handheld test generators and monitors are still the norm, but testing is pretty much the same, except for lip-sync, which is sometimes overlooked, until it goes "out." Ian Gott, maintenance engineer with WPSD-TV in Paducah, Ky., uses a metronome with an LED and speaker out to check and set lip-sync on remote field productions. That may be a new use for an old product.

DISTRIBUTION: FILES, SDI AND STREAMS

After the content is acquired, it's either likely a file, SDI, or a stream, most likely with embedded audio. For files, there are several applications on the market that can do a quick analysis of those files.

For a portable approach, Triveni Digital recently launched its tablet-based StreamScope Portal MPEG analysis and monitoring tool.

Richard Duvall, technical marketing manager with Tektronix, says he's seen continual growth year on year with software for automated QC of file-based workflows, a prominent feature of the company's Cerify Video Content Analysis platform. "Tektronix's Cerify was recently endorsed by Netflix for use by their content suppliers," he said.

That seems to be the norm "as most programming is now sourced and disseminated as files," according to Paul Keller, project manager with Harris Broadcast's test and measurement line. "File-based test systems like our QuiC Pro are an important part of a media asset management system," he said.

For a portable approach, Triveni Digital recently launched its tablet-based StreamScope Portal MPEG analysis and monitoring tool. "In studios and headends, the engineering team is looking for a more portable solution," said Ralph Bachofen, vice president of sales and head of marketing for the Princeton, N.J.-based company.

For file transfer and good IP performance in general, products like Solarwinds' IT-LAN Management Software can go a long way in indentifying issues with your LAN.

For SDI distribution, broadcasters' needs seem to have changed over the last 5 years, according to Tektronix's Duvall. "[Broadcasters'] interest was focused on physical infrastructure and engineering compliance, whereas now, their focus is on regulatory compliance [e.g. closed captions, loudness], and lower cost," he said.

Issues such as closed captioning, CALM compliance, and Disclaimer line count for political ads are the three big things most tested in studio environments today, according to vendors. In addition, for that one "evaluation" video monitor (where they are not using multiviewers), broadcasters are looking for professional video monitors that can not only display an accurate picture, but can also de-embed audio and display closed captioning, all in one.

As broadcasters determine how to manage their budgets for test and management, test equipment rental companies are seeing an upsurge in business as broadcasters seek to optimize their budgets and balance CapEx against OpEx, according to Bob Nichols, director of international business development for Cobalt Digital in Urbana, Ill.

"Cobalt has a large and expanding customer base of rental companies around the world," he said. Triveni's Bachofen supports that position as well, saying "renting equipment is clearly a trend."

TRANSMISSION

While over-the-air viewership took a pretty good nose dive in decades past, the increase in "cord-cutting" has led to a rise in OTW viewership recently. In this economy, broadcasters are after every viewer, and every penny. And this applies to its digital auxiliary channels as well.

After all of the content is gathered, it's ready to be placed in its .1, .2, and .3 slots, and it seems that some broadcasters are maximizing the life out of their gear. Dan Wilson, senior maintenance engineer at WPSD says their station still uses their original Harris Flexicoder platform that was introduced in the 1990s.

Rohde & Schwarz's R&S EFL110/R&S EFL210 interference analyzer platform detects interference in cable TV and LTE networks, as well as most VHF/UHF channels.

"For our Flexicoder test and measurement, pretty much all we've had to do is add a Harris Transport Frequency Extractor to monitor the 19.39 Mbps stream, and keep a solid 10MHz source to the unit," he said.

For broadcasters using IOTs, Gott and Wilson both agree, the occasional removal of "gunk" from the water cooling fins on the tubes is key to IOT longevity; WPSD's IOTs were installed in 2004 and are still making power. Touching on microwave gear, both STL and ENG, they also agree that in today's environment, it either works, or goes back to the factory.

For RF test and measurement in general, things are definitely better.

"RF sampling and digital signal processing are now good enough to economically provide long-term monitoring so that trends can be discerned before they impact audience coverage," said Harris' Keller. Going a step further, Duvall

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IN THE NEWS

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4K SHORTCOMINGS

As professionals continue to move towards 4K the market continues to evolve. This is spreading beyond the use in the studio as well, and it is here that new problems require new solutions.

"4K is becoming a serious niche for field production, post production," said Steve Mahrer, Panasonic senior technology alliance manager. However he adds, "4K also brings new problems. A simple yet everyday example is the ability of the DP or cameramen to actually see focus. On HD monitors, the DP could see focus on a 7-inch or 9-inch HD LCD attached to the camera. These HD LCDs had peaking that provided an indication of camera/lens focus. Alas, 4K requires something new and better; a 4K image that is soft or not at critical focus is essentially useless and disappointing."

As a result, Mahrer suggests that Panasonic's 31-inch BT-4LH310 LCD Production Monitor, which features multiple professional inputs including HD-SDI, 3G-SDI and HDMI; true color processing with a 3D LUT; HD/SD closed captioning; 28 Volt DC operation for field use; and an eco-friendly panel with mercury-free LED backlight, could "be the right size to fulfill the field use need."

Moreover Mahrer noted that Panasonic plans to have the 31-inch monitor work in an Academy Color Encoding System (ACES) environment, as well.

"This is where the workflow is defined by the colorspace and gamma profiles of the camera, the monitoring display and the final theatre projector," Mahrer said. "The ability to load an ACES 3D LUT to correctly display on the 31-inch LCD what the customer in a movie theater will see and adjust the color accordingly is very important."

JVC is also touting its latest feature-friendly 84-inch monitor, which was introduced last year at CEDIA and then shown as a production model at InfoComm. 4K allows for 4x full 1920x1080 HD signals to be displayed on a single monitor where cameras need to be matched, and these larger monitors make for easy comparing of the images.

"It has a stunning image," said Yanagi. "It provides a multiview environment in situations where there is a need for large sizes, especially with 4K production. This enables the ability to use this monitor without compromising the resolution."

TEST

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from Tektronix adds that "demand for RF test and monitoring has declined significantly in the last 10 years. Monitoring interest has shifted from QoS [RF transmission-related] to QoE [content related]." While power meters and spectrum analyzers are still required on occasion, their frequency of use (no pun intended) in troubleshooting has dropped off sharply.

Triven's Bachofen has a bit of a different take, however. "The basics of RF are the same," he said, "however, the addition of mobile DTV and the discussions surrounding ATSC 2.0 and 3.0 make the RF side continue to be relevant and challenging."

Greg Kregoski, business development manager, Multimedia & A/V Test North America for Rohde & Schwarz, takes a different angle.

"With many white space devices not having an ATSC/8VSB receiver built-in, it's likely that the need for RF interference analyzers will grow as the perfect storm for UHF/VHF spectrum continues to form," he said. "We've recently introduced the EFL110 interference analyzer, enabling users to track down legal as well as rogue signals [VHF and UHF] and observe them in frequency, amplitude and time."

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SCTE Looks at Cable's Evolving Tech Landscape

Integrated networks, accelerated deployment, HEVC top Cable-Tec Expo agenda

BY GARY ARLEN

ATLANTA—The shifting focus at the Society of Cable and Telecommunications Engineer's annual Cable-Tec Expo is a good gauge about what's important to cable's technology community. Last year, the emphasis was on wireless, fiber optics and Internet Protocol TV; the previous year it was home networking and the environment.

Hence, this year's themes of network integration and accelerated deployment reflect the industry's aggressive push toward full-scale communications services and its "TV Everywhere" objectives. Even the sessions on High-Efficiency Video Coding (HEVC) are motivated by the need to prepare the cable plant for greater integrated demands, according to Daniel Howard, SCTE's CTO and senior vice president of engineering.

NEW NETWORKS, NEW DEMANDS

Cable-Tec Expo's agenda for the event, Oct. 21–24 in Atlanta, is also laden with sessions on information technology solutions, "big data" and cloud-based architectures and services.

Kevin Hart, program chair for the show, emphasizes the rationale behind this year's concentration on IT and next-generation network services, which he says represent the industry's growing competitive position.

"Configuring cable networks to deliver new types of services is creating the need for increased learning opportunities for cable engineering and operations professionals," said Hart, who is executive vice president and CTO for Cox Communications.

Organizers expect around 10,000 attendees at this year's Cable-Tec Expo, Oct. 21–24 in Atlanta.

Cable-Tec Expo is expected to attract about 10,000 attendees, similar to levels during the past few years. Howard noted that international attendance was up about 3 percent last year and that there are expected to be delegates from 70 countries, emphasizing the global growth of wired broadband.

Former FCC Chairman Michael Powell, now president/CEO of the National Cable & Telecommunications Association, will kick off the general sessions with a policy-focused presentation, followed by two panels featuring, respectively, the CTOs and CEOs of major cable operators and suppliers.

In addition to dealing with the "four 'any's'" of TV Everywhere (any content, any place, any time, any platform), Howard stresses the importance of the industry's accelerating technology development process.

"We have to know how to 'scrunch down' product cycles," he said. This issue, he notes, is particularly important as the industry deliberates the future of set-top boxes, a topic that will inevitably rumble through the Georgia World Congress Center, site of the Expo.

"You've still got two camps," Howard acknowledges, citing "people who want to put powerful devices in the home [for] remote management of home networks… [and others] who advocate BYOD [bring your own device] and want to put everything in the cloud. The jury is still out."

Howard also notes that software-defined networks will be part of this discussion at Cable-Tec Expo.

FIVE TARGETED AUDIENCES

SCTE has identified five distinct audiences among its mostly-engineer audience: Radio frequency and optical experts; IP and IT professionals; network and field operations specialists; OSS/BSS (Operations Support Systems and Business Support Systems) personnel; and the emerging new category of applications specialists. Howard says that the program is structured to these sectors, with most sessions repeated at least once to assure that attendees can tune into topics if there is a schedule conflict.

This year's workshops are clustered into four tracks: Physical Layer (bit-level transmission between different devices and networks' physical connections); IP Networking (support of IP within cable networks); Quality Assurance (such as capacity management and systematic measurement), and Advanced Services (focus on productivity and profitability). The latter track also emphasizes TV Everywhere, advanced advertising systems and cloud-based-services, Howard explains.

"We'll focus on proactive network maintenance and gathering intelligence about the status of the network," he said. "We're moving to a world of powerful apps within the home," driven, he notes by advanced platforms such as Liberty Global's Horizon service in Europe and Comcast's X-1 and Xfinity in the U.S."

Big data lets us adapt to new applications that may gobble a lot more bandwidth capacity," Howard says, pointing out that discussions of how to implement services such as Wi-Fi and hotspots are built into the "Physical Layer" track's sessions.

Howard considers the HEVC sessions a prelude to the cable industry's ability to handle video services such as 4K and eventually 8K UHDTV. "HEVC gives us the ability to transmit the content even without UHD sets being in the market," he says. "You can always increase the compression ratio."

The Expo's exhibit hall, with nearly 400 exhibitors (about the same as last year), will feature devices and services that reflect the event's focus on engineering and operations support. Some of the focus areas of past years, such as the "Green Pavilion" and energy/environmental displays are now embedded into other presentations, both on the show floor and in conference sessions, according to Howard. He points out, for example, that a fiber-optics session will include presentations about the energy efficiency of passive optical network (PON) architecture.

To promote Cable-Tec Expo—and recognizing that its target audience now includes "millennial generation" audiences, attuned to visual marketing—SCTE has produced a series of two-minute videos in which speakers and moderators present overviews of their presentations and panels. The videos have been available on the Cable-Tec Expo website (*http:expo.scte.org*) since mid-summer.

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Virtualizing the Growth of Metadata

KARL PAULSEN

With a growing need to retain all sorts of data applicable to media and entertainment content, where and how all the variances will be kept is a continuing question that storage vendors, enterprise media asset management (MAM) providers and equipment manufacturers continue to address. Could a universal approach to storing all forms of data make life easier? The simple answer is "yes," but the devil is always in the details. Understanding the foundation of the issues and how to manage growth is this month's topic.

Experienced users are now taking the perspective that the metadata they collect about the content they manipulate is probably more valuable than the content itself. That is, if you just store content with a file name (unless you have a really intelligent file-naming schema); then the value of your content is only as good as the name attached to it.

In many cases that file name is pretty worthless, usually a broad name that looked good at the time (such as "KFC Shoot Day One") plus an incremental number related only to the order in which it was captured, like '1620130415'. The cryptic decoder ring might help two weeks later when somebody else needs to find the file, but not likely. If the file name was originally generated by the imaging system (the camera), the name may never be conveyed into the storage system as it gets transposed to another meaningless number set. The file name gets another sequence number when it moves to the NLE; and the list continues.

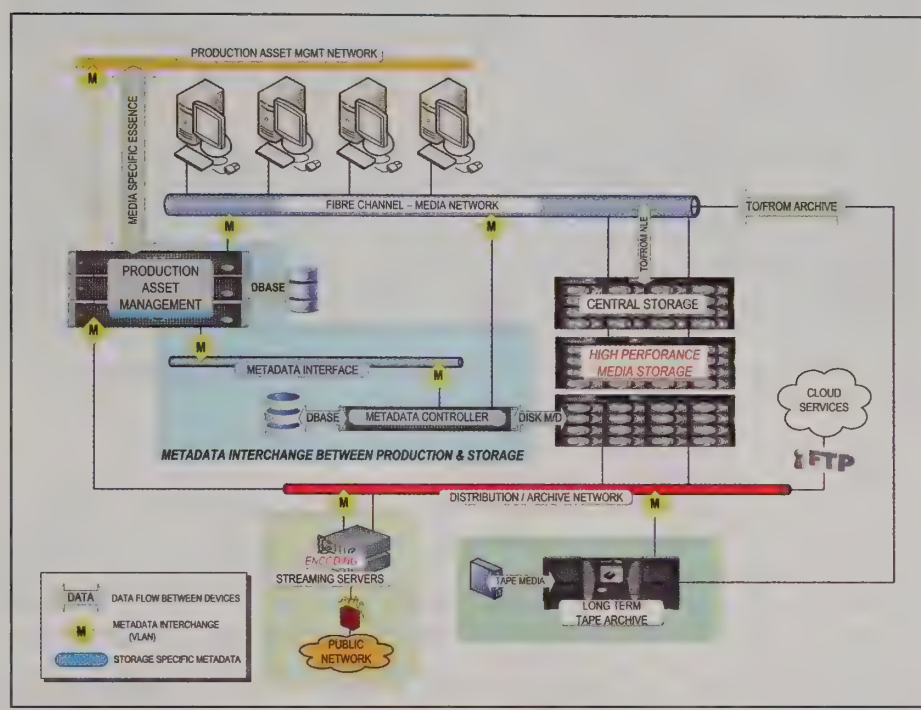

Fig. 1: Metadata interchange combines both production-specific metadata and system-level (storage) metadata. The fundamental ability to exchange and interpret each respective metadata set among the various elements throughout a system is essential to file-based workflows.

A MAM or production asset management (PAM) can provide significantly more value to the data-identification dilemma. A PAM will generate its own number in its own database, applying it to the ingest set of content as each asset is "registered" into its system. The information is stored, as metadata, under a usually proprietary scheme and harvested during the editing or reviewing process.

Seldom can that metadata be exposed to other applications without a dedicated API that must be developed and interfaced specifically between the originating PAM and the next system needing use of that metadata. This API becomes an important, if not essential, element for migrating one metadata set to the next.

A DOMINO EFFECT

Fields from the originating PAM database must be mapped to fields in the new production database. Keeping those databases synchronized then becomes another choke point unless both systems are actively watching each other to see which system made a change that could, in turn, impact the next system downstream.

A domino effect happens when any of the metadata systems don't align precisely with the next handoff point, creating a problem that grows exponentially.

That is just the tip of the iceberg from the metadata/database perspective. The next breakpoint becomes understanding or tracking "where is all that metadata going to be stored?" Surely we understand that content file sizes keep getting larger (a 1080i59.94, 50 Mbps XDCAM HD file is 4.4 GB), but those files generally number in the tens to hundreds (maybe a thousand or two), at least for the average single-user group.

Storing those large, contiguous files is managed fairly well by today's media-aware central storage systems. However, the metadata files for this level of content, once the tagging (manually adding more information) and editing begins, will reach one or two orders of magnitude more in size. The dimensions of those file sets are relatively small, as a couple kilobytes to maybe a megabyte at most.

Manipulating (i.e., associating, retrieving, updating or re-assigning) these huge

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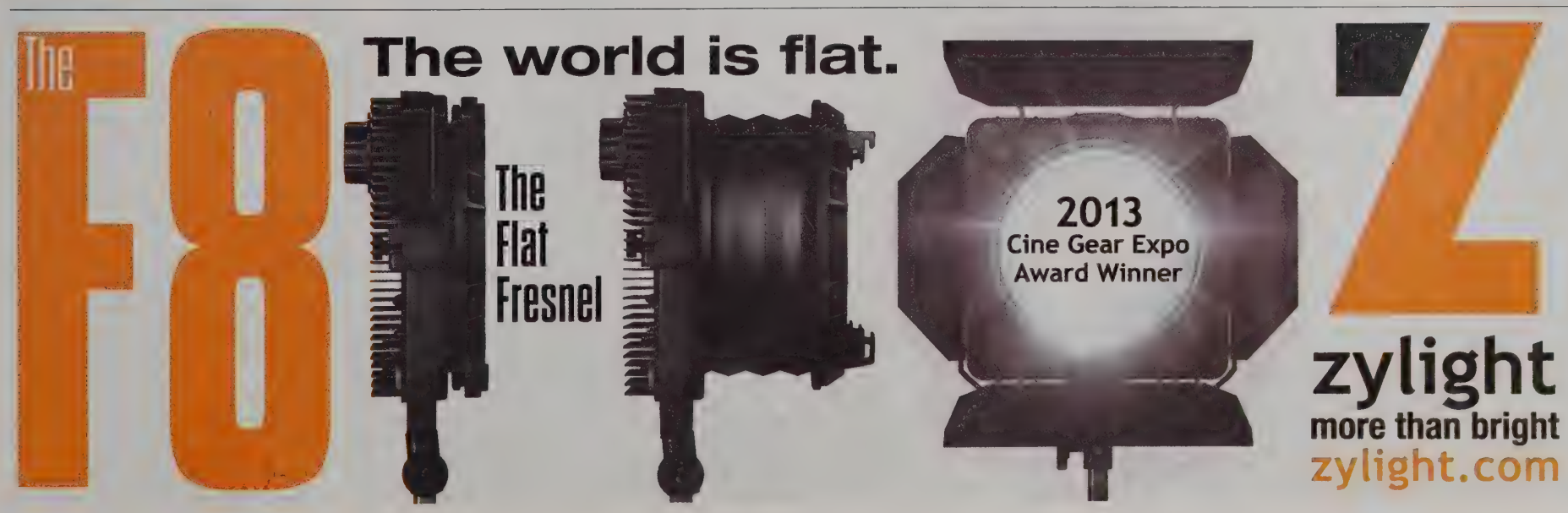
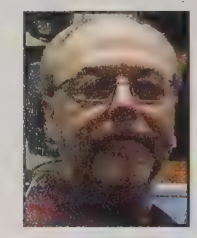


The Other Social Networking for TV Pros



JAY YEARY

In this column we're taking a brief detour from technical audio topics to examine something that could be key to a sustained career in the modern television industry. Social media is everywhere these days. Facebook, Twitter, LinkedIn, and other Internet social networks dominate technology and financial news while their data gathering tentacles reach deeper into our lives.

Media organizations and television professionals are required to maintain an online presence in order to stay competitive and may be considered out of business if they can't be found online. We connect with friends through Facebook, grow our business network through LinkedIn and share insight through Twitter.

PROFESSIONAL ORGANIZATIONS

Even with all of this activity we may actually be ignoring the social networks that can have the most impact on our business. These networks have not-so-catchy names like the Audio Engineering Society (AES), the Society of Broadcast Engineers (SBE), and the Society of Motion Picture and Television Engineers (SMPTE). Along with similar organizations, they provide a global support system that serves the technical and craft sides of the industry.

An "Acoustic Measurement Workshop" hosted by the AES Atlanta Section. Panelists from left are: Charlie Hughes, Ivan Beaver, Tom Danley, Wayne Lee, Doug Jones

What makes them critical to the business is that these professional networks are present in physical form all over the world. They are present in standards and practices that drive the creation and distribution of media that eventually crosses over into the world of the consumer. They also manifest themselves in the form of conferences, workshops, conventions, and local chapters, giving members and associates opportunities for education, involvement, and personal connection.

The fact that these groups provide a forum to actually meet in person is a significant and often overlooked benefit, because the face-to-face, real-world connections made through these groups can be life- and career-changing.

> The fact that these groups provide a forum to actually meet in person is a significant and often overlooked benefit, because the face-to-face, real-world connections made through these groups can be life- and career-changing.

My first encounter with AES (*www.aes.org*) was at an annual national convention. At the time I was unaware of what happens behind the scenes at these events or that AES is a global standards body. Workshops, papers, tutorials, seminars and meetings of standards working groups are going on while attendees cruise the exhibit floor looking at equipment. The standards groups are particularly interesting because they hammer out the technical details of audio standards that show up in our cellphones, automobiles, and the tools we use for audio production. For more information on AES's annual show, see "AES to Focus on Audio in a Multi-Device World" on p. 14.

While AES is primarily concerned with audio, SMPTE is focused on television and cinema engineering. Like AES, SMPTE (*www.smpte.org*) has meetings and seminars along with an annual conference in Hollywood where some of the sessions can be quite complex.

Current standards work from these organizations include specifications for audio-over-IP, metadata, file formats and wrappers, synchronization, equipment interfaces and facility infrastructure. Participation in standards working groups is open to anyone with an interest (SMPTE also charges a participation fee) and gives members the satisfaction of being involved in work with a lasting impact.

SBE (*www.sbe.org*) was created for the continuing education and certification of broadcast engineers and does not publish standards or have working groups. It does, however, have a calendar constantly busy with training sessions and meetings at both the national and local levels.

ON THE LOCAL LEVEL

While the large events held by these organizations are important, the local level is where the majority of engagement and personal connection takes place. Most large cities or regions have local chapters that hold regular meetings, which also happen to be excellent forums for education and for meeting other professionals whose path you might not otherwise cross.

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METADATA

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volumes of tiny files against the represented content becomes a monumental chore that imposes all sorts of risks should something get out of sync or fields get mismatched.

As a result, the metadata databases for all active content must be managed with a separate set of controllers (with independent applications) and kept on a separate storage system designed for high transaction rates—not unlike those employed by supermarkets that are linked directly into a corporate inventory management, pricing and order replenishment system. If you think about it, the supermarket model is actually much simpler than the media content management system; the latter tracks thousands of items with fixed universally available information, while the former tracks information that is extremely dynamic and is continually modified throughout the entire workflow.

THE 'SECRET SAUCE'

That's not the end of the metadata tracking scenario. We've just described the associative "content-related" metadata used in the production portions of the creative processes. In the background, literally working overtime, are the system metadata controllers; those that manage where all the files on the disk storage systems actually reside and how those chunks of data are mapped against file allocation tables, external metadata databases, replication and resiliency models (to protect the data) and a lot more.

These are usually proprietary subsystems that become the "secret sauce" of the overall big data management system for a specific storage vendor's solution. This flavor of metadata controller is usually what a storage vendor will think most about. Physically, most storage vendors will build their metadata controllers as outboard server units that are linked to the data storage crates through a high-speed conduit that collects and distributes all threads of information between the drive chassis and the controllers.

With this broad perspective on the levels of storage types and what must be routinely and continually accomplished, we return to the opening inquiry: "Could a universal approach to storing all this data (on one virtual storage platform) make life easier?" The answer still appears to be a qualified "yes."

As storage vendors recognize the need to scale up by dynamically adding resources (drive capacity, control points, metadata managers), the key becomes in finding a storage control platform that can address performance, capacity and multiple storage vendor solutions all on a harmonious single command-and-control structure.

The future of storage management depends on the nondisruptive migration to new technologies as improvements in all dimensions are introduced. Having to scrap an entire storage system because the controller can no longer address an increase in storage capacity is ludicrous. Placing limits on the storage system (the complete system including metadata controllers) forces users to manage their data as though it were on discrete LaCie 2TB portable hard drives.

While tiered storage solutions may help manage some of the immediate issues, in the long run users should pick a storage platform that allows them to virtualize for the future as opposed to addressing only their near-term needs.

The future of storage management depends on the nondisruptive migration to new technologies as improvements in all dimensions are introduced.

Karl Paulsen, CPBE and SMPTE Fellow, is the CTO at Diversified Systems. Read more about other storage topics in his current book "Moving Media Storage Technologies". Contact Karl at kpaulsen@divsystems.com.

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COMREX

NETWORKING

CONTINUED FROM PAGE 26

Subject matter for local meetings is typically decided on by the local section officers who look to their members for guidance, which means that even new members can help shape the section. Since local sections are able to tap into the national and global resources of their organization, it's possible to encounter professionals from all over the world at the meeting happening in your town.

Meetings held by local sections can be quite varied and include workshops, demos, tours and even field trips. The local professional organizations in my city regularly hold co-sponsored events when topics of interest overlap, which gives the members of the different organizations the opportunity to meet and collaborate. Attending a local meeting to hear about a new tool or technology can often result in connections that last a lifetime, deeper involvement in the organization, enduring friendships or the realization of an undiscovered passion.

While building our online presence is important, building our face-to-face professional social network can provide more immediate and also enduring benefits.

In this column we've looked at only three of the professional organizations that support the television and media industries, but there are many others, enough that every television professional should be able to find one that fits them. Every organization meeting or workshop provides the opportunity for education and to meet other professionals who may help solve a problem or pave the way for an improvement in the way we work.

Meetings held by local sections can be quite varied and include workshops, demos, tours and even field trips.

Don't let these opportunities pass you by. I encourage you to check out your local professional organizations to find out which one best suit you. Then step away from your computer and attend a meeting or two. Listen, learn and talk to people. I think you'll be glad you went. And don't be surprised if, as a curious byproduct of your professional social network, you one day find yourself writing a magazine column. Stranger things have happened.

THANKS

I want to thank Dave Moulton for spearheading this column for the last 15 years. Dave did a remarkable job writing "Inside Audio" while covering an array of audio-centric topics. I was a regular reader and have many of his columns saved in my reference library.

I didn't thank him properly when I took over this space, partly out of surprise that I was writing it and partly from the effort to get that first column whipped into shape and turned in. So this is a much delayed thank you to Dave for keeping us all informed, entertained and on the "Inside Audio" track for so many years. Thanks Dave!

Jay Yeary is an active member of the AES and SMPTE organizations and has participated in many SBE events. He can often be found in workshops and training sessions at local meetings and national conferences. He can be reached through TV Technology Magazine or via Twitter at TVTechJay.

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Don't Leave Home Without These iApps

JAY HOLBEN

I'm not a "Mac guy." In fact, as I write this, I'm typing on an HP Pavilion m7 laptop, but I do love my iPhone and iPad. Dearly. They, truly, are technological marvels that make every day work (and life) easier.

I've done a number of reviews of "iApps" over the years, but this month's column will be a roundup of some of my top recommendations for TV lighting professionals. All of the following apps are for the iOS platform unless otherwise indicated.

POCKET LD

Pocket LD, a reference and calculation software for entertainment lighting professionals, is, thus far the only iApp I've found that has photometric calculations that are pretty accurate.

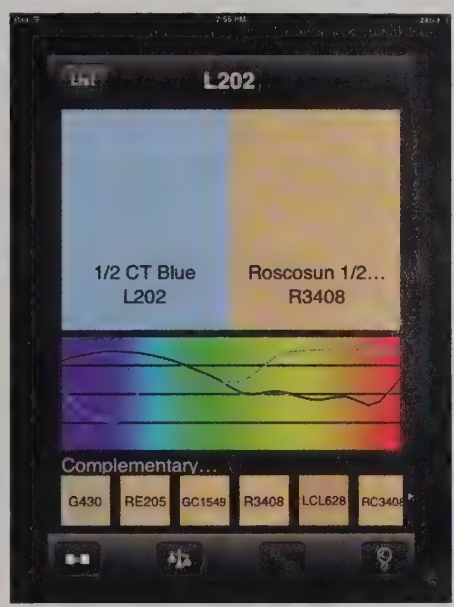
Of course, real-world photometrics always differ from lab readings, but they can be a solid starting point. Pocket LD features a library of fixtures from ADB, Altman, Arri, Colortran, Dedolight, DeSisti, ETC, K5600, KinoFlo, Kobold, LTM, Mole-Richardson, Strand and a couple more. You pick your fixture; you pick the lamp you want in that fixture; and then you come to a calculator screen. This gives you the wattage, color temp, lamp life, beam angle, field angle and candella rating.

Pocket LD, *The Zinman Co.*
$19.99, 0.9MB
www.zinmansoftware.com

You enter in your throw distance in feet or meters and the calculator gives your beam angle size and footcandle measurement at that distance. You can select "favorite" fixtures so you don't have to hunt through the library for frequently used illuminaries.

GEL SWATCH LIBRARY

Swatch is a digital gel swatchbook on your iDevice. Select any of the available gel colors from Gam, Lee, Rosco or Apollo, in any of their available lines of gels. Looking for Rosco cinegel selection? The full swatchbook is listed, with simulated colors for each gel. Looking for Rosco 1/2 CTB? Swatch gives you 3204; shows the spectral distribution of that gel, along with the light transmission value and red, green and blue contents.



Gel Swatch Library (iPhone)
Gel Swatch Library HD (iPad)
Scott Longberry Wybron Inc.
$9.99, 5.6MB
www.geonames.org

In addition, it shows you similar gel colors from competitors' lines or even other product lines within a manufacturer. You can see similar colors side-by-side, with comparison spectral distribution or you can look at complementary gel colors.

For instance, the app shows that Roscosun 1/2 CTO (3408) is the complementary gel color to 3204; or you can see that L230 or GAM 430 are possible complementary colors. You can also apply the gel to an LED light fixture (daylight or tungsten), an HMI fixture or a tungsten fixture and the app will simulate the resultant color, including showing the spectral distribution of that specific fixture type.

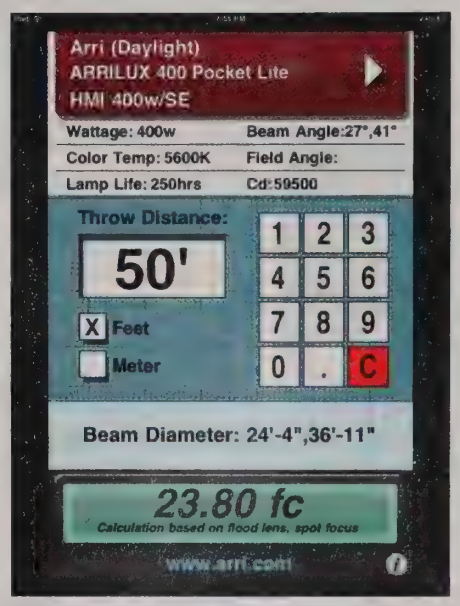
Even if you don't take advantage of these features, just having an app that includes all the swatch colors of all the manufacturers where you can easily see a similar color in another book is an advantage.

Do you typically use Rosco's Canary Yellow (R312), but are in a place where you can only get Lee from a dealer? This app shows you that Lee's Oklahoma Yellow (767) is a very close match to Rosco's Canary. That function alone is powerful enough to merit the cost of the app.

SETLIGHTING

SetLighting is a database of lighting fixtures from Altman, Arri, Barger, B&M, Cinemills, DeSisti, ETC and many more. Get the specs on fixtures—sometimes this is just a scan of the manufacturer's spec sheet; sometimes it's broken into a more "interactive" format with base information, lamp choices, accessory choices and miscellaneous data.

The app also includes information on distribution, cable types, distribution boxes, generators and more. It's a large reference book in your pocket. At times, some of the details are random and esoteric; some fixtures have little to no information, others have detail ad naseum. The balance, however, is a very useful app for best boys, gaffers and lighting directors as well as cinematographers.



SetLighting, *Enlightened Shenanigans*
$7.99, 464.1MB
www.esthegripapp.weebly.com

The complement to SetLighting is The-

iAPPS, PAGE 30

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Production teams in the field or in studios face uncertainties every day. Critical to their successes are communications systems that can rapidly respond to the unexpected. The HelixNet™ Digital Network Partyline and Tempest® Wireless Intercom Systems are ideal for this need.
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www.clearcom.com

Surprising Results Using Real Antenna Patterns in TVStudy

DOUG LUNG

The FCC TVStudy OET-69 software includes the ability to run studies using actual antenna azimuth and elevations patterns, but it wasn't until release of Version 1.2.8 that there was a way to apply mechanical beam tilt only to stations with real antenna patterns. This is critical because applying mechanical beam tilt to horizontal plane radiation patterns that usually have no relationship to the signal on the ground leads to bogus results. This month I'll show the impact of using the TVStudy defaults compared with the use of real antenna patterns. The results surprised me!

> I did not expect coverage to decrease when accurate antenna models were used. The shrinkage in a noise-limited area (contours) with real patterns was not expected.

MECHANICAL BEAM TILT EXPLAINED

Most UHF and high-VHF TV transmitting antennas located on tall towers or mountain tops use some form of beam tilt to push the signal down to the ground. Sending the signal straight out perpendicular to the antenna would result in much of the signal being lost in space. The beamwidth of the signal from the antenna narrows with increased elevation gain.

A station on Mt. Wilson, more than 5,000 feet above Los Angeles, would have very little signal on the ground if it used a high-gain antenna without beam tilt.

A transmitter site located near the center of the population can use electrical beam tilt (EBT) to provide the same amount of down tilt in all directions around the antenna. In this case, the horizontal plane azimuth pattern will be the same shape as the main beam azimuth pattern with EBT.

However, in markets such as Los Angeles where the antennae are at high elevations near the edge of the population center, mechanical beam tilt (MBT) is often used with EBT to put more energy into the populated areas and reduce the power wasted over sparsely populated mountains, deserts and ocean.

Like most Mt. Wilson stations, KNBC uses EBT and MBT. The MBT results in the horizontal plane azimuth pattern show less energy over Los Angeles and more over the mountains and high desert to the north. KVEA on Mt. Harvard also uses EBT with MBT and the differences are even greater there.

The patterns shown in Figs. 1 (KNBC) and 2 (KVEA) are from the TVStudy Pattern Editor Plot tab.

USING REAL ANTENNA PATTERNS

During the DTV transition I received a number of emails from companies trying to use FCC antenna patterns to display coverage of Los Angeles area stations. They wondered why the antennas were pointed in the wrong direction. MBT and the resulting horizontal plane radiation pattern are the reason. Let's look at what happens to the coverage and interference predicted by TVStudy when we use real antenna patterns instead of the FCC horizontal plane pattern.

While stations have to include real azimuth and elevation pattern data on their FCC CP applications, many do not include tabular data in a format easy to convert into a .cvs file for import into TVStudy. The KNBC and KVEA pattern data can be cut and pasted from the data in the engineering exhibits.

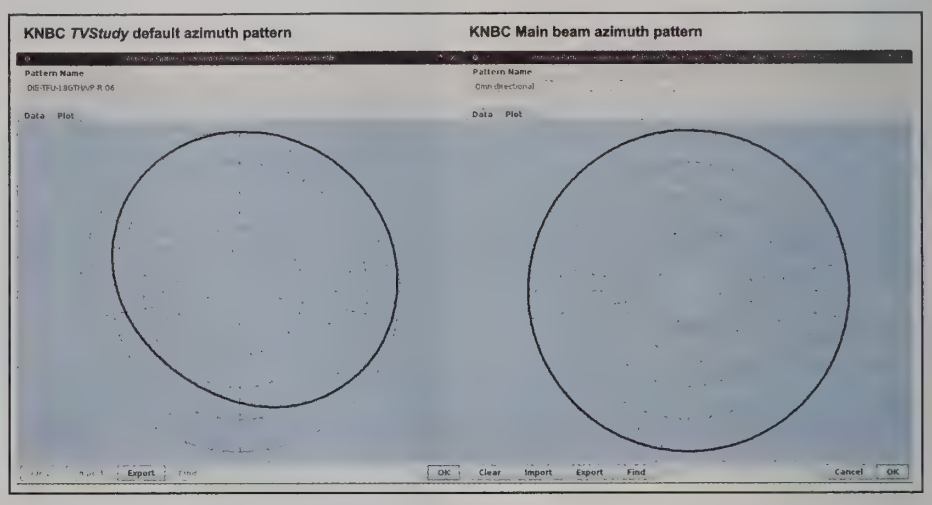


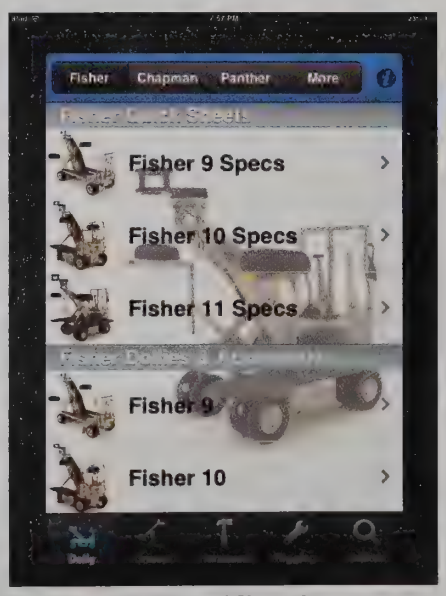
Fig. 1: TVStudy Pattern Editor Plot tab for KNBC

ION Media was kind enough to provide a PDF with tabular data on the Dielectric TFU-26DSC-R C170 used at KPXN-TV. KPXN-TV is an adjacent channel to KVEA and at the same site so it makes an interesting case

iAPPS

CONTINUED FROM PAGE 29

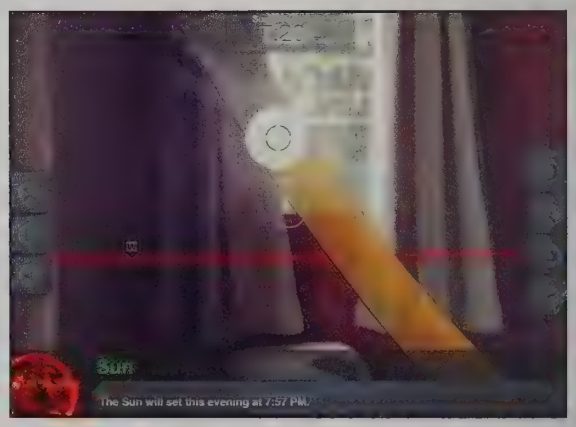
GripApp, by the same company. Again, a reference book in your pocket for grip hardware, cranes, dollies, condors, truss, knots and more. The company is also working on an Android version, according to their Web site.



TheGripApp, *Enlightened Shenanigans*
$7.99, 285MB
www.esthegripapp.weebly.com

SKYVIEW

For location shooters, this is a must. Although I'm a big fan of Helios (Chemical Wedding's sun-tracking software that is very advanced), it's sometimes too complicated. SkyView is incredibly simple and intuitive. Although the app is really designed for star and planet spotting, you can turn all of that off and make it just sun (and moon) tracking program.



SkyView, *Terminal Eleven LLC*
Free, 40.3 MB
www.terminaleleven.com

When you're on a location scout, set the date and time of your shoot and see exactly where the sun will be. Use the iPhone or iPad camera to sight the sun—where it will be at any given point in the day. A clearly visible path shows you the travel of the sun throughout the course of the day. If you sight to any given point along that path, it will tell you the exact moment the sun will be in that position.

Want to know when the sun will go behind a nearby building and give you open shade? SkyView will show you that will happen at 4:27 p.m. on the day of your shoot. No need for compass and clinometer—it's all built-in and crazy easy to use. Best of all, it's free.

These are just some of the iApps that I always have with me on both my iPhone and my iPad—all of which make my working day a lot easier.

Jay Holben is the technical editor of Digital Video and a contributor to Government Video. He is also the author of the book "A Shot in the Dark: A Creative DIY Guide to Digital Video Lighting on (Almost) No Budget."

INSIGHT RF TECHNOLOGY

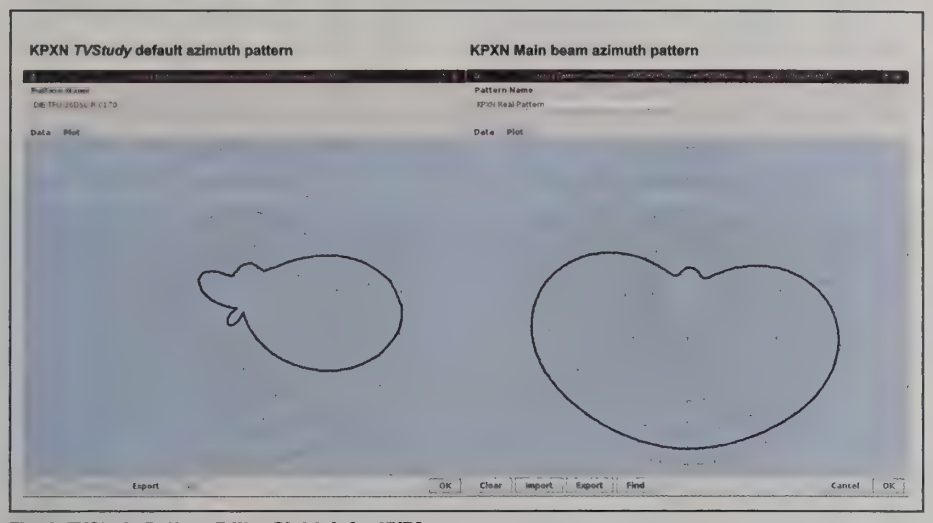


Fig. 2: TVStudy Pattern Editor Plot tab for KVEA

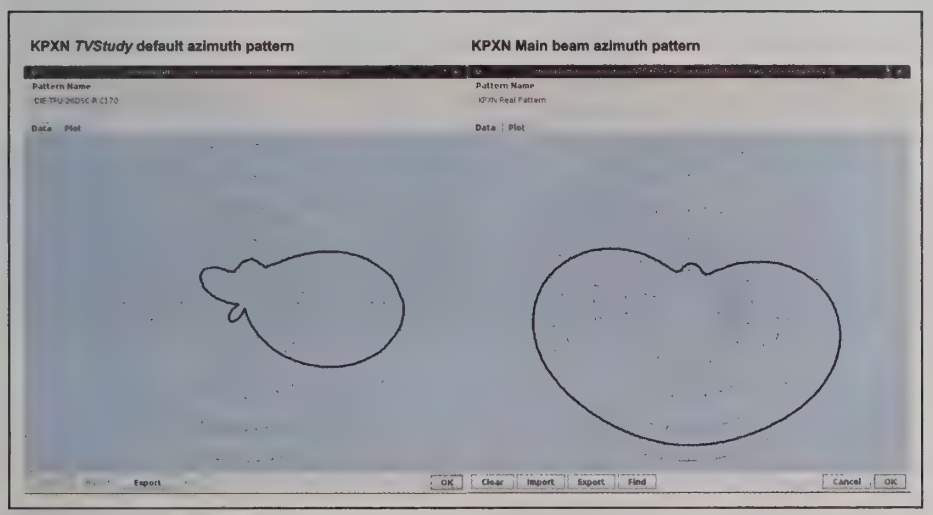


Fig. 3: This shows the KPXN FCC azimuth pattern and the main beam pattern.

	Scenario 1 Default Patterns	Scenario 2 Real patterns KNBC, KVEA, KPXN	Scenario 3 Real patterns KPXN Only	Scenari0 4 Real patterns KVEA Only
KNBC				
NL area	51,377.4	51,816.1		
NL Pop	17,857,754	17,891,602		
TL area	33,374.0	34,208.7		
TL Pop	16,210,287	16,441,165		
Interference Free area	32,945.8	33,848.7		
Interference Free pop	15,916,598	16,281,960		
KVEA				
NL area	32,614.6	28,847.4	28,847.4	32,614.6
NL Pop	17,014,122	16,778,481	16,778,481	17,014,122
TL area	17,791.5	17,268.2	17,268.2	17,791.5
TL Pop	15,104,526	14,663,356	14,663,356	15,104,526
Interference Free area	16,267.6	16,148.6	15,600.1	15,795.4
Interference Free pop	14,484,082	14,392,070	14,373,972	12,153,759
Interference from KVEA	300,682	54,078	72,176	2,631,005
KPXN				
NL area	41,283	28,109	41,283	28,109
NL Pop	17,791,823	16,825,300	17,791,823	16,825,300
TL area	26,878	17,776	26,878	17,776
TL Pop	16,117,222	15,097,085	16,117,222	15,097,085
Interference Free area	26,382	17,564	26,402	17,532
Interference Free pop	16,000,073	15,074,057	15,973,243	15,081,084
Unique IF from KPXN	6,086	12,399	32,916	5,372

NL = Noise Limited TL = Terrain Limited IF = Interference Pop = 2010 Census (TVStudy)

Table 1: TVStudy V 1.2.8: Default vs. Real Patterns

to see the effect of real vs. bogus antenna patterns on coverage and interference in TVStudy. Fig. 3 shows the KPXN FCC azimuth pattern and the main beam pattern.

My studies for KNBC, KPXN and KVEA were done using TVStudy Version 1.2.8 on Manjaro Linux. Default Study Parameters were used except for real pattern studies where "Use mechanical beam tilt" in the "Patterns" tab and "Use real elevation patterns for contours" in the "Contours" tab were changed.

In creating scenarios, for station selection I selected "Prefer operating facilities" and "Search by service." Selected services were DT, DD, DC and CA. "Search by center point and radius" was selected using a 320-kilometer radius around the KNBC tower. "Allow editing" was selected in the scenarios to allow entering real antenna pattern data for the stations, and the box on the edit screen allowing default patterns to be used in some cases was unchecked for scenarios/stations where the real pattern data was used.

Table 1 shows noise-limited coverage, terrain-limited coverage and interference-free coverage for four scenarios: 1) TVStudy default patterns and parameters; 2) Real antennas patterns with mechanical beam tilt for KNBC, KPXN and KVEA; 3) Real antenna patterns for KPXN and defaults for KVEA; and 4) Real antenna patterns for KVEA and defaults for KPXN.

More details are available on the spreadsheets and files I've made available on the file menu at *http://xmtr.com/RF242*.

The results surprised me. I did not expect coverage to decrease when accurate antenna models were used. The shrinkage in a noise-limited area (contours) with real patterns was not expected.

Next month I'll see how the contours from "Use real elevation patterns for contours" match contours plotted at the radio horizon per Part 73 and how some of the other settings affect the results for these three stations.

I'd like to do a test with a pair of adjacent channel stations using mechanical beam tilt in another market. If you can provide real azimuth and elevation patterns in a text-extractable format for the stations drop me an email at dlung@transmitter.com *and if time allows I'll run the same comparisons on them.*

INSIGHT FOCUS ON EDITING

3D

CONTINUED FROM PAGE 1

"3D movies are subject to the same cyclical laws of economics that all other industries suffer," said Jim Chabin, president of the International 3D Society. "About 44 major Hollywood films will be released this year in 3D, which is relatively consistent with 2012. In addition, more than 120 3D films were promoted at the Cannes Film Festival."

For 3ality Digital, the company that provides the gear for most of the 3D film and television productions, business couldn't be better.

"We have never been busier," said Steve Schklair, founder and CEO of 3ality Digital, who David Monk introduced during a 2011 IBC keynote as "The father of modern 3D" for driving innovations that have enabled cost-effective stereoscopic capture.

"The 3D feature film industry is incredibly healthy," Schklair said. "However, in the [United States] the 3DTV business has seemed to stagnate."

> "The 3D feature film industry is incredibly healthy, however, in the [United States] the 3DTV business has seemed to stagnate."
> —Steve Schklair, 3ality Digital

The reason behind this phenomenon has become fodder for the 3D detractors, so let me try to deal with the three major factors that seem to have impacted 3DTV's acceptance in the United States: the drawbacks of active 3D displays; the awkwardness of 3D eyewear; and the supposed lack of 3D content.

ACTIVE VS. PASSIVE

In my humble opinion, the U.S. display manufacturers made a colossal error by initially marketing 3D sets with active displays that required battery-driven, sensor-triggered shutter lenses in their glasses. Not only are the glasses expensive and require recharging on a regular basis; they also have to re-acquire the triggering signal if you look away at something like a second-screen iPad. And, almost incredibly, the active glasses offered by different set manufacturers were incompatible with each other.

At the time, industry insiders told me that it was considerably cheaper to produce active 3DTVs than passive displays with polarized lenses in the glasses. Somehow it did not seem important that the significant disadvantages of the active system meant that people may buy the sets, but not invest in enough glasses to make 3D-watching a practical group viewing experience.

Across the pond, Sky3D, a subsidiary of British Sky Broadcasting Group (BSkyB) started its 3D satellite service to the United Kingdom in October 2010. But they had the great advantage that their subscribers had access to passive 3DTVs from Hyundai and LG.

Not only did that mean the British had a better home viewing experience, it also very crucially enabled the installation of 3DTVs in public areas like British pubs. You could not do that if expensive shutter glasses were the only alternative for the sports crowds.

To lure in audiences, Sky 3D even created a "Pubs and Clubs" division to help finance the installation of passive 3DTVs in public venues, and set up a website, *http://3d.sky.com/pubfinder*, so fans could find where to watch their favorite teams in all the glory of 3D.

"We were also the world's first broadcaster to present 'Avatar' in 3D to the home," said John Cassey, Sky 3D's director of 3D, "and we have developed a great relationship with all the major studios to show their theatrical features to U.K. households. Mixing films, sports and big event programming, we now provide 16 hours of 3D content each day."

With this kind of marketing behind it, Sky 3D announced last July it had acquired 500,000 U.K. subscribers. 3DTV is very much alive in England, Northern Ireland, Scotland and Wales.

Now that NPD DisplaySearch estimates that passive sets in the United States account for approximately 35–40 percent of all 3DTVs sold, we may see this phenomenon repeated in the States, with bars, hotels, conference centers and other public places introducing 3DTV imagery to a wider audience just as they did with color TV in the 1960s.

But, what about the eyewear?

"Everyone hates wearing the goofy glasses," whine the 3D doomsayers. Oh yeah? Does anyone object to putting on sunglasses for a day at the beach or wearing goggles when skiing?

But, it is true that balancing 3D glasses on top of prescription glasses can be dismaying for the millions of Americans stuck behind their own indispensible specs.

So why are 3D clip-on glasses not more readily available? You can find them in online catalogs, but I have yet to see them offered to the public at a theater. If I'm paying a $4 premium to watch a 3D presentation, it doesn't seem unreasonable to expect comfortable eyewear.

3net / Hillbilly Blood

From the 3D series "Hillbilly Blood: A Hardscrabble Life by 3net"

LACK OF CONTENT

Then there's the lack of content. Again, I am baffled by the home 3D industry's marketing strategies.

Last February, before the Super Bowl, I purchased a 42-inch LG Cinema 3D LED-backlit set and I have been enthralled not only by its HD image quality, but also by its 2D-to-3D conversion capability.

"Two years ago LG redefined the whole category of home 3D when we brought out our Cinema 3D sets," said John Taylor, vice president of public affairs for LG Electronics USA. "That's because they use the same polarized 3D glasses worn in a movie theater."

Oh yes, I can hear the knee-jerk reaction against 2D-to-3D conversion, but those knee-jerkers may be discounting the success of its use in many blockbusters including all of the Marvel Studios 3D features.

I find this 2D-to-3D system highly satisfying, partially because it intelligently utilizes positive parallax that recedes most of the depth back into the screen. After all, who wants things popping out at you?

Sports, especially baseball, can be fun to watch converted into 3D. I regularly use vintage Warner Bros. cartoons as test samples when film or TV industry friends drop by. And the fact that LG won't disclose which algorithms they are using for the process only makes me more curious why it works so well with black-and-white films. Watching Humphrey Bogart walk in front of Sydney Greenstreet in "The Maltese Falcon" immediately underlines the added value of this extra dimensionality.

When my party guests for last February's Super Bowl XLVII viewed the spectacular Beyoncé half-time show converted into 3D on this remarkable LG set, the only thing they wanted to do when the game was over was watch the half-time show again. In 3D, of course. LG's 2D-to-3D feature is not perfect, but it is downright acceptable to help fill the vast void of 3D offerings to the home.

Strangely, when I accidentally discovered my subscription to Verizon's FiOS service offered two (unadvertised) free movies in side-by-side 3D, my call to their tech support, asking where such offerings were listed, received the baffling response, "I have no idea. Nobody ever asked me about that before." I was directed to the billing department, which was equally clueless.

But, there is hope. Now that Netflix has started testing the streaming of 3D entertainment on its Netflix Open Connect network we may finally get access to its vast 3D library.

For those who still want to get snarky over 3DTV, there is always 4K on the horizon. Right?

Jay Ankeney is a freelance editor and post-production consultant based in Los Angeles. Write him at JayAnkeney@mac.com.

EQUIPMENT REVIEWS

FOR MORE INSIGHT AND INNOVATION VISIT TVTECHNOLOGY.COM/10-02-13

Harris' Maxiva UAX Low-Power Transmitter

BY JOEY GILL

The physical world has its limitations—things can only get so small. Nowadays, we're all quite accustomed to seeing technology pack more

EQUIPMENT REVIEW

features into smaller packages. Why should the world of solid-state transmitters be any different? Evidently that is what the designers at Harris Broadcast were thinking when they came up with the Maxiva UAX Compact Class transmitter. It features a built-in exciter, drive chain and remote access/control, all in a 2RU package.

Harris Maxiva UAX

FEATURES

The solid-state Harris Maxiva UAX is part of the company's "Compact Class" of transmitters, with power levels from 5 to 50 watts, and as tested, providing frequency-agile UHF coverage from 470 to 862 MHz. The unit weighs about 25 pounds, adds less than 65 dBa of acoustic noise (as measured from one meter in front of the transmitter), and is air-cooled via internal fans with a front-to-rear airflow. It takes AC power between 110 and 230 volts at frequencies between 47 to 63 Hz. Rear panel ports include RF output, RF input sample for RATC, transport stream inputs (two, configurable as SMPTE 310M, DVB-ASI or DVB-T2MI). There are also a couple of ports for DVB-ASI hierarchical modulation and a 10 MHz reference input, as well as for a PPS reference, along with a DHCP-enabled RJ-45 Ethernet for networking. Front panel ports include a 10 MHz reference output (SMA, 50 ohms), 1 PPS reference output (SMA, 50 ohms), RF monitor output (SMA, 50 ohms) and 1 RJ-45 Ethernet for customer access.

As a transposer/translator, the Maxiva supports all COFDM and ATSC standards and has a digital, tunable RF input filter.

FAST FACTS

APPLICATION
Low-power transmitter, repeater and gap filler

KEY FEATURES
Compact, solid-state technology, multifunction operation

PRICE
MSRP as tested, $9,950

CONTACT
Harris Broadcast
800-231-9673
www.harrisbroadcast.com

The front panel also features an LCD screen along with Status, Power and Setup buttons immediately below. To the right of the screen is a "menu control wheel" and buttons for remote enable/disable, output power adjustment and an on/off control. Seven status LEDs provide a quick status check of TS input, drive chain, power amplifier, supply power, output, system and mute.

The transmitter also includes a built-in GPS option to support single-frequency network operations, full remote control capability including Web-based HTML, GUI interface, SNMP and parallel/monitoring.

As mentioned, the Maxiva has dual transport stream inputs with manual/auto switching and Real-Time Adaptive Correction (RTAC). It supports DVB-T/H, DVB-T2, ATSC, ATSC-MDTV, ISDB-Tb, CMMB and CTTB modulations.

As a transposer/translator, the Maxiva supports all COFDM and ATSC standards and has a digital, tunable RF input filter. As a gap filler, its features include powerful adaptive echo cancellation with up to 15 dB gain margin for exposed stations and difficult situations and a very low processing delay.

The Maxiva features Harris PowerSmart Technology inside, and offers high power and efficiency, utilizing new 50-volt LDMOS devices. Its exciter offers the Apex M2X technology platform.

IN USE

When the Harris Maxiva arrived, I mounted it in my test rack and attached the supplied directional coupler with dummy load. Next, I connected my station's SMPTE 310 stream to the input and applied AC power. The LCD screen was easy to read and the information was simple and direct. The display provided forward and reflected power figures (it indicated "0" and "0" values for these at power up). I raised the forward slowly, leveling it off at about 22 watts. At this level, reflected power measured only about 12 mW. All was well. However, what channel was I on?

HARRIS, PAGE 34

Atomos Ninja 2 HD Field Recorder

BY CHUCK GLOMAN

Australia's Atomos Ninja 2 is a high-definition field recorder and monitor that's compatible with both PC and Mac platforms. Using the Ninja 2 is

EQUIPMENT REVIEW

as simple as connecting your camera to the recorder/monitor via an HDMI cable. You can record uncompressed 10-bit HD or SD footage and export Avid DNxHD or Apple ProRes files for editing. I'm not sure that it gets any easier than this.

FEATURES

The Atomos Ninja 2 follows on the heels of its precursor, the Ninja, which came out several years ago. While there are some similarities between the units, the "2" has several features and does several things its older sibling didn't include. These include an Avid DNxHD codec; HDMI output; higher screen resolution; monitor displays that include false color, peaking, blue-only, zebra and Smartlog; 3:2 pulldown removal, ExFAT file format to enable storage of larger files, HDMI timecode, and D-Tap adapter support.

The Ninja 2 is contained in a small, durable carrying case and comes complete with monitor and housing, two NP-F570 7.4-volt Lithium-Ion batteries (other batteries are available), a PN201 dual-port battery charger, USB cables and an AC power supply with three plugs for international use.

I should point out that there are, however, a couple of critical items that are not supplied and must be ordered separately.

These are the hard drive and HDMI cable. Obviously an HDMI cable is readily available from other sources, but the hard drive necessary to use the unit may require a bit more shopping. I was able to obtain a 500 GB hard drive from a local video dealer. Atomos does not supply drives, so check with your local reseller.

While several video cameras/camcorders provide an HDMI port for recording uncompressed, high-definition footage, only a few DSLRs offer this. I am aware of two Nikon units that are on uncompressed speaking terms with the Ninja 2: the Nikon D800 (36 megapixels) and the D4 (16 megapixels). I used the Nikon D4 for this review.

The main Ninja unit itself weighs in at slightly less than a pound without the wafer-thin hard drive and batteries. These bring the total weight figure up by another pound (less than two pounds total).

The unit is constructed of lightweight aircraft-grade aluminum, so the low weight doesn't mean it's not durable. It's not particularly power-hungry either—the recorder I tested operated for as long as 10 hours with both batteries attached.

The 16:9 image on the monitor's 800 x 480 screen is not as sharp as most DSLR LCD screens, but considering that when you attach an HDMI cable from your DSLR to the Ninja 2 monitor, the camera's LCD screen does not de-activate like it normally would when you attach an external monitor.

FAST FACTS

APPLICATION
Capturing, monitoring and exporting location footage

KEY FEATURES
Large storage capacity, very reasonable price Portable hard drive recording utilizing a touch screen monitor; a large storage capacity, and easy transfer of footage in post.

PRICE
MSRP: $995

CONTACT
Atomos
503-388-3236
www.atomos.com

The side of the monitor contains an HDMI input/output, allowing as many as three monitors to be operated simultaneously (more on this later).

There's also a mini stereo "line in" and a mini output port for headphones located on the same side as the HDMI ports.

Atomos Ninja-2

The top and bottom of the monitor include a female thread insert for mounting. Other items on the case include the unit's power button and internal hard drive release. (The removable 2.5 inch HDD slides easily into the monitor and may be removed and inserted into one of two included workstations that have both USB and Firewire 800 ports.)

Your files can be recorded in 1080/60i, 1080/50i, 1080/30p, 1080/25p, 1080/24p, 720/60p, 720/50p, 480i and 576i. Real-time 1920 x 1080 encoding is a fast 220 Mbps in HQ mode, 150 Mbps in 422 mode, and 100 Mbps in LT in the Apple Pro Res mode. The speeds will be relatively similar in Avid's DNxHD mode.

When you crunch the numbers, this is between 5 and 11 hours of footage on a

HARRIS

CONTINUED FROM PAGE 33

Below the power display was the menu display list, including On-Air Data, Digital Signal Path, PFRU (Precise Frequency Reference Unit), Up/Down Converter, LPU, Battery Backup, Transmitter I/O, Revisions, Fault Log, System Settings, Adaptive, Transmit Power Settings, Remote Comms and Defaults.

Under the PFRU, I was able to find "Center Frequency," and noted the frequency, 582 MHz. This didn't please me, as I like transmitting on UHF Channel 36. Therefore, I killed the RF output (habit), and using the menu navigation buttons, I selected the center frequency setup and changed it to read 605 MHz and then pressed "enter." Voila, I was on Channel 36, where my station belongs.

I raised the power and connected a little consumer DTV to the directional coupler output (using a paper clip as an antenna) and there were all three channels that we regularly broadcast.

After having successfully put this unit on the air without reading any instructions, I figured the next order of business should be to gain remote control via the Ethernet port.

I scrolled down the menu to find "Remote Comms," and under that menu I found "Rear IP address." After connecting my laptop to the unit using a crossover cable, I typed the address into my Chrome browser. A log-on screen appeared, wanting a pesky "User Name" and "Password." There was a box to click as a guest with "View Only" privileges. When I clicked there, I was able to pull up the GUI and look but I needed control!

At this time I took the instructional CD from the box and loaded it into my desktop PC. Once the PDF loaded, I searched "User Name" and once again, I had the keys to the gate: "admin-admin" were the magic words. The remote GUI proved to be slick, simple and intuitive. I was able to raise and lower power, and all of the status info I needed for remote control was displayed.

SUMMARY

Over the next few weeks, I let the little transmitter sit in my office and cook. I did adjust the power down so that the dummy load wouldn't get too hot, but the unit never missed a beat. The "Output" LED indicator responded to a low RF condition when I lowered the drive, and I checked the TS LED by unplugging the SMPTE 310 feed.

I next unplugged and powered up the system several times to see what would happen in a power bump, and it always came right back up to normal.

This is a really complete transmission system in a 2RU package, and one that you don't have to go to a training program to learn how to deploy.

My regret was in not being able to put it on the air.

Joey Gill is chief engineer at WPSD-TV in Paducah, Ky. and has been with the station for 30 years. He has worked in television since 1977. He may be contacted at respond2jgill@yahoo.com.

500 GB drive, 2.5 to 5.5 hours on a 250 GB drive; and from 10 to 22 hours on a one TB drive.

Supported editing programs include Final Cut Pro 7 and X; Avid's Media Composer 5.0; Adobe Premiere 5.5; Vegas Pro 10; and Lightworks.

IN USE

I first tested the Ninja 2 in a cinematography class that I teach. We were using a Nikon D4 DSLR to capture a four-and-a-half-minute dolly shot. Beginning with a long shot, then slowing dollying 30 feet and finally ending up with a close-up shot, the crew had quite a task ahead of them.

The D4 was attached to the Ninja 2 via an HDMI cable and the loopthrough was used to connect to another monitor with a second HDMI cable.

I powered up the Ninja 2 via the touchscreen and activated the monitor function so that I could use the unit as an external monitor. Pressing the record control started the time code and I could see everything that was displayed on the Nikon's LCD screen.

The camera operator and focus viewed the action via the camera's LCD and I walked alongside the dolly rig holding the Ninja 2. Once the scene was completed I pressed "stop" on the screen and was immediately able to view the footage we'd captured.

The Ninja 2 gave each take a shot number that was recorded by our second assistant camera operator. (One minor drawback with the Ninja 2's playback is that you must go through several menu screens until you locate what you're looking for and your finger must press the QuickTime icon exactly dead center in order to select that shot.)

When viewing the footage immediately after recording, you can scrub through the "timeline," with fast forward and rewind commands and basically do anything a NLE can do in addition to zebra and numerous other features.

After we were satisfied with the shoot I slipped the HDD into one of the caddies and connected it to my Final Cut Pro system via Firewire. I also took the CF card from the Nikon and imported that footage.

I could see no discernable difference in quality between what was recorded on the camera's CF card and that recorded on the Ninja 2.

> Once the scene was completed I pressed "stop" on the screen and was immediately able to view the footage we'd captured.

There are two different ways of looking at the Ninja 2. One is that it is an excellent, high-quality way of capturing all of your footage in the studio or on location. Our batteries never wavered and we had the Ninja 2 on constantly. The 500 GB drive is large enough to shoot a sizable project and is a lot easier than keeping track of a handful of 16 GB CF or SD cards.

The other option is using the Ninja 2 as a backup recorder, as I did in connection with the Nikon's internal capture. If part of the production crew needs to play back a scene while the camera operators are setting up for the next shot, no problem; the Ninja 2 gives you the freedom to do this.

SUMMARY

I really had no issues with the Ninja 2, and after a while its use became second nature. Editing footage is as easy as hooking it up to your computer. I should note that there are many features the Ninja 2 possesses that I didn't have space to cover here, for example, portability is one of its greatest features.

Also the Ninja 2 is an economical way to store captured content when you consider that the cost of a 128 GB CF card approaches $600. For less than $1,000, you have four times the card's storage capacity and an external monitor to boot.

If you're looking for a portable hard drive-based recorder for handling your studio, field and editing needs, you really can't find a better solution than the Ninja 2.

Chuck Gloman is chair and associate professor of the TV and film department at DeSales University. He may be contacted at chuck.gloman@desales.edu.

Affordable Video Wall and Multiview Solutions from Gefen

The 1:4 HD Video Wall Controller for HDMI is ideal for creating a 2x2 video wall consisting of four displays with bezel adjusting control. It has the ability to show the same video as one large display or individually on all four displays.

The 4x1 Multiview Switcher for HDMI is a seamless switcher that connects four sources to one display. It has dual functionality in that it can switch between all four sources and output the selected source to a single display, or it can output all four sources as individual windows on a single display for picture-in-picture functionality.

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K5600's Joker 1600 Zoom Beamer

BY CHUCK GLOMAN

K5600's literature says, "The Joker 1600—Not just another HMI." And this is not just another HMI. Where else will you have the punch of a 1,600-

EQUIPMENT REVIEW

watt HMI (roughly equivalent to a 6K in quartz light output) with the ability to be plugged into a 15 amp circuit? The Joker 1600 is a focusable and dimmable, daylight-balanced HMI with versatility for all situations.

FEATURES

Packaged in a 60-pound case, K5600's Joker 1600 is available in three configurations: Bug-Lite, Beamer and the variation being reviewed here—the Zoom Beamer. This lenseless light has a focusable 1,600-watt lamp offering an even output throughout its range. The 700-hour lamp moves with the reflector to spot or flood the light. A slide lever on the light allows you to change between these two settings.

The unit is powered by a relatively small ballast with an illuminated green circuit breaker. A control on the ballast also enables the Joker 1600 to be dimmed—something not seen on many HMIs. As mentioned, the lamp draws less than 15 amps, allowing it to be used just about anywhere. Its 15-pound black aluminum head easily mounts on a C-stand and the unit comes up to full brilliance in a short time.

The joy of an HMI is that it's daylight-balanced. High-wattage tungsten lamps pull too much power to be really practical when used on remote shoots where daylight-balanced illumination is needed to compete with the sun.

FAST FACTS

APPLICATION
Wherever a daylight-balanced, dimmable light source that delivers a strong output is needed.

KEY FEATURES
Ability to focus, dim and operate on standard household power rolled in a package that will compete with the sun in just about any location.

PRICE
$9,560

CONTACT
K5600 Lighting
800-662-5756
www.k5600.com

The crew sets up the K5600 Joker 1600 Zoom Beamer to achieve the "cool moonlight streaming through a venetian blind onto the actor's face effect" described in the review.

IN USE

I tried the Joker 1600 Zoom Beamer on four separate shoots, with it serving as the key light source in each. In one of these, we wanted cool moonlight to stream through a venetian blind onto one of the actors. A tungsten source wouldn't really work as we needed a moonlight effect.

We placed the Joker HMI about 15 feet from the window and mounted a half CTB (color temperature blue) balancing gel on a C-stand two feet in from the light. I also had students place a cardboard venetian blind "cookie" in front of the CTB gel.

In the house, I half-closed the blinds so the HMI's light passed through the gel, two sets of venetian blinds and the century-old window glass. The overall effect was quite strong and was what we were aiming for.

Our 200 and 800 Watt HMIs just didn't have the punch to create moon beams that strong—score one for the Joker 1600.

Using the Joker 1600 as a key source outdoors, we had our "angel" character standing on a roof 25 feet off the ground. The Joker 1600 was her key illumination. Knowing HMIs make whites pop, this extra illumination on the rooftop figure helped separate her from an overcast background. The instrument added an extra half-stop of illumination to her face and was sorely missed when it was turned off.

The third shoot took place at night and involved using the Joker 1600 as the key lighting source. We needed to illuminate a 1955 Ford Fairlane and this could only be accomplished with an extremely bright light source.

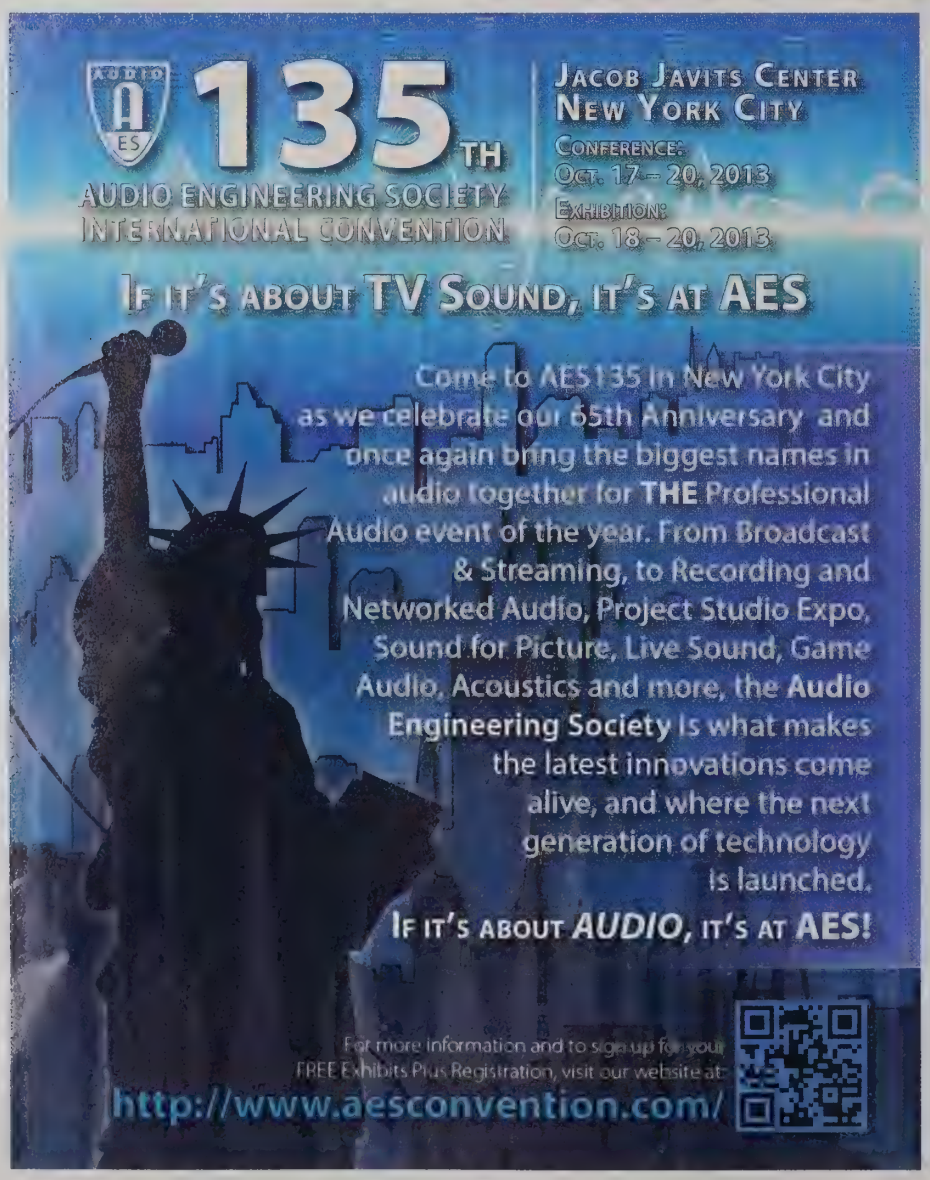
> I tried the Joker 1600 Zoom Beamer on four separate shoots, with it serving as the key light source in each.

With the Joker HMI trained on it, the car stood out nicely in what was otherwise total darkness.

Our last shoot provided the only indoor use for the Joker 1600. We needed a heavily diffused source of sunlight and the fixture provided us with the warm, glowing rays of the sun—an effect that could not have been easily accomplished otherwise.

The Joker 1600 is one bright light

K5600, PAGE 38



BBS Lighting's Area 48 LED Lighting Device

BY CARL MROZEK

LED technology has revolutionized our industry with cooler, lighter, brighter, softer and more efficient lighting than is feasible with traditional sources. However,

EQUIPMENT REVIEW

not all LED instruments are created equal. The majority owe much of their special luminosity to phosphors coating their diode structures.

A new variety, however—remote phosphor technology fixtures—provides a brighter, more efficient light source, with a color temperature that depends on the phosphor panel selected, and without the loss of one to two *f* stops due to filters.

FEATURES

BBS Lighting has pioneered the development of interchangeable phosphor panels. These move the phosphor away from the LED to provide greater efficiency, more light, better color fidelity and cooler operation.

The BBS Area 48 demonstrates the great potential of this unique LED technology for professional lighting applications. The light head itself is built around 48 high-capacity LEDs. There's an interchangeable phosphor panel that's excited by the LED array and provides the actual illumination.

With suitable phosphor panels, the Area 48 can provide color temperatures ranging from 2700–6500K. (Panels are available for 2700K, 4300K, and 6500K; there's also a green phosphor for chromakey green screen applications).

The light's housing is constructed with a sturdy textured black metal alloy. It's rectangular, measuring approximately 11 x 14 x 4.5-inches. Onboard barn doors are available to limit light dispersion at angles of up to 160 degrees. At full capacity, the unit's light output is equivalent to that obtained from a 1 kW soft incandescent instrument.

There's an onboard digital dimmer that provides flicker-free dimming from zero to 100 percent in one-degree increments. It also includes an internal DMX 512 interface for remote control in studio applications.

➤ FAST FACTS

APPLICATION
ENG, TV and film studios, and location shooting

KEY FEATURES
High efficiency, soft lighting, interchangeable phosphor panels for different color temperatures, operation with AC and DC power sources

PRICE
Basic kit with one phosphor panel, barn doors, yoke and power supply, $2,295; options include a softbox with diffusion, $330; 40-degree grid; Gold/V-Mount battery plate, $235

CONTACT
BBS Lighting
800-820-6610
www.bbslighting.com

BBS's Area 48 EZ LED phosphor panel lighting instrument

Due to the cooler LED/phosphor panel technology (along with some wide metal fins on the back to help with heat dispersion), the Area 48 has no need for a cooling fan and operates silently.

The housing includes an angled yoke, which enables the fixture to be tilted up or down within a 180-degree arc for optimum versatility. The instrument may be powered by a 160-watt AC power supply (adapter) or from 14.6 V Pro DC camera batteries. It is equipped with an Anton/Bauer Gold Mount, but can also use V-lock batteries by adding an adapter.

At 100 percent output the Area 48 draws around 160 watts, so a 100 Watt-hour battery should power it at nearly full output for around 45 minutes and for more than an hour when it's dimmed to 50–60 percent of capacity.

According to a BBS data sheet, the Area 48 provides an impressive 4147 Lux at 1 meter, 1037 Lux at 2 meters, and 96 Lux at six meters. Other screens may be added to the softbox to diffuse and shape the light. Also, one or even two pairs of Area 48 lights can be strapped together with special brackets to create an even beefier soft light with an output equivalent to that from a 4 kW tungsten fixture.

IN USE

The Area 48 I reviewed arrived with the barn doors onboard and the mounting yoke pre-attached. A number one on the LCD screen indicated that the illumination level was at one percent (in manual model the level is boosted or lowered in discrete one percent increments). Each one percent increment corresponds roughly to 10 watts of illumination from an incandescent source. Hence, boosting output by 20 percent is equivalent to adding a 200-watt incandescent light. Taking it to 100 percent is the equivalent of switching on 1000 watts of incandescent lighting.

BBS, PAGE 41

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EQUIPMENT REVIEWS

K5600

CONTINUED FROM PAGE 36

source. It can easily compete with the sun to fill in shadows, or it can be diffused, flooded or even dimmed down to suit the situation. I also really appreciate the fact that the light does not need its own generator and is light enough to easily be mobile.

There are a few minor issues with the Joker 1600 that keep it from being the perfect light for every garage. Although the unit is not that expensive for all it does, a replacement lamp is very expensive at more than $600. With a 700-hour maximum life, this makes it a somewhat costly (and fragile) instrument to operate.

A scene from the movie showing the moonlight/venetian blind effect achieved with the K5600.

Also, when used indoors the unit takes quite awhile to cool. Needing to vacate one of our shooting locations (an Italian restaurant) so that paying patrons could occupy its tables, the Joker 1600 was the last item to be removed from the set as it was too hot to touch otherwise.

Outdoors it did keep us warm in the 14-degree wind chill factor environment in which we were working. However, it is nice to know that our electric bill wouldn't be overly inflated because of this lighting instrument.

SUMMARY

The Joker 1600 Zoom Beamer is the perfect light for almost all situations. It has enough power to serve as the sun, moon or just about any other concentrated source of light. Its ability to be focused and dimmed makes it even more versatile.

Once you get past the expense of the lamp, and its extended cool-down period, I defy any other light unit to do what this one does at its price point.

Chuck Gloman is an associate professor and chair of the TV/film department at DeSales University. He may be contacted at chuck.gloman@desales.edu.

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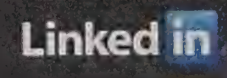

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AUDIO PRODUCTIONUDIO PRODUCTION

WANT TO SELL

Sennheiser EM 1046-RX 16-chnl wireless mic system w/16-EM 1046 RX-L, 16 SK-50 UHF xmtrs & mics, call; Wohler LM26-32 32 chan meter, Call; Graham Patten DESAM 400 mixer, call; PSC M6 retro portable audio mixer, call; Wheatstone Smart Select Card Systems from TV-80 console, BO; Wheatstone PSC-125/PSC-1000/PSC340 pwr splys, call; Sony MXP-744 36-chnl mixer, BO; Otari MTR-10 II, BO; Wohler EMON-1 digital audio monitor, BO; Linear Acoustics UPMAX 2251, BO; Yamaha M2000 40-chnl mixer, BO. 908-879-9590 or www.mccom.tv.

CAMERAS

WANT TO SELL

Panasonic AG-3DA1 HD 3D cameras, B Stock, $3995; Panasonic AG-HPX600 w/BW VF, demo, call; Panasonic AG-HPX370 P2, new, call; Panasonic AG-HPX250 P2, new, call; (6) Hitachi Z4000W triax cameras w/SDI complete w/lenses & remotes, call; Panasonic AJ-HPX2700 P2 Varicam, call; Panasonic AG-HPX170 P2, new, call; Panasonic AG-AC160 camcorder, new, call; Hitachi SK-2600 camera, BO; Panasonic AJ-SDC915 w/Fujinon 20X lens, call; Sony DNW-90WS w/lens, BO; (5) Sony BVP-550 cameras w/CA-550 triax adapter, BO; (3) Hitachi SK2700W triax cameras w/ SDI & lenses, call; Sony DXC-D30 camera heads, $475/ea; Hitachi Z3000W camera, BO; (3) Hitachi Z3000W triax cameras, no lens, call. 908-879-9590 or www.mccom.tv.

Sony BVP-30 BetaSP video camera, Canon lens and 3 Anton Bauer Pro Pac 14 batts & Livesaver charger, over 16 yrs old & used but still works, $500/all or BO. 213-237-0544 or stevetaylor2010@gmail.com.

CAMERA ACCESSORIES

WANT TO SELL

Fujinon ZA22x7.8BERM lens, B Stock & Used, call; (2) Fuji HA 18x7.6BERM-M58 w/2X B stock, call; (2) Fuji Has18x7.6BRM B Stock, $5990/ea; Fujinon ZA17x7.6BERD-S58 B stock HD lens w/2X, call; Fujinon XA17x7.6BRM, new, call; Fujinon A18x7.6BERM, new, $2990; Fujinon A22x7.8BDEVM lens, 2X, call; Sony MSU-750, BO; Hitachi RC-Z2A remote panels, call; Sony CCU-700 w/SDI, call; Fujinon ELZ-11D cable, new for ERD zoom, $600.00; Hitachi Z32 adapter, call; Telemetrics TM-9250A triax CCU w/50-CA triax camera adapter, BO; Panasonic AK-HCU931 CCU, new, call; Vinten Teal Pedestal, no head, call; Sachtler Video 18 II w/HotPod, BO; Sachtler Video 25 w/2 stage CF legs, call; Shotoku SP-100-2AM tripods, new & Shotoku SP60-2AM tripods, new, call. 908-879-9590 or www.mccom.tv

DIGITAL EFFECTS

WANT TO SELL

Abekas DveousMX, 2-chnl HD DVE, call; Abekas Dveous Dual Twin, call. 908-879-9590 or www.mccom.tv.

EDITING EQUIPMENT

WANT TO SELL

Editware Fast Track, call; Sony BVE-2000, BO; Panasonic AG-750 editor, BO. 908-879-9590 or www.mccom.tv.

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MISCELLANEOUS

WANT TO SELL

Selling 1949-1952 original 16mm of news footage of a New York TV station, BO. If interested, please call Ron at 925-284-5428 or ronwtamm@yahoo.com.

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Tandberg RX1290, call; Tandberg TT1260, call; Panasonic AJ-FRC27P frame rate converter, call; Tektronix SPG-422 digital sync gen, call; Tektronix ECO-422D changeover, BO; ADC video patchbays, call; Leitch 6800 Plus Frame w/10 VSE-6800+ DA's, 2 PS, call; (3) Leitch 6800 Plus Frame w/10 VSM-6800+ DA's, 2 PS, call; Miranda Playstore SDI still store, call; Miranda Easy Key A/B SDI keyer, BO; Chyron Infinit 060 SDI, BO; Leitch FR-8804-1 trays, call; Leitch 6800+ trays, call; GVG 8500 w/8-8503 video DAs, BO; Prime Image Time Machine, call; Videotek DL810 legalizer, BO; Leitch FR-6804-1 frame 10 Cobalt 5040 SDI to analog, call; Leitch VPA-331N video proc amp w/remote, BO; Fortel FRM-504 frame w/RCP-303 remote panel FS-411A video sync, w/Duplex Mode 4-Das-441 audio sync & processor; FS-412 video sync; (2) FS-411 video sync, BO. 908-879-9590 or www.mccom.tv.

WANT TO BUY

2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

MONITORS

WANT TO SELL

(25) Panasonic BT-LH910 9" HD monitors, B Stock, $1999/ea; (2) Sony BVM-D24E1WU 24" w/HD, SDI, $1550/ea; Panasonic BT-L1500 15" LCD, B stock, $950; Panasonic BT-910 Olympic monitors, $1999/ea; (3) Panasonic TH-65PF30U 65" Plasma demo, $1600/ea; (3) Panasonic BT-3DL2550 3D LCD monitor, B stock, call; Sony BVM-D14H5U 14" multi-format monitor w/SDI, $595/ea; Sony PVM-20L5 20" multi format monitor w/120D SDI module, BO; (2) Sony BVM-20G1U w/SDI & BKM-10R, call; Sony BVM-14F1U w/SDI & BKM-10R, call; (2) Ikegami TM20-90RH 20" color monitor w/SDI, $450/ea; Marshall V-R18P 8 LCD monitor, call; Clarity Bobcat 40" LCD monitors w/mount, call. 908-879-9590 or www.mccom.tv.

MOVIE PRODUCTION EQUIPMENT

WANT TO SELL

BTS/Thomson FDL-60 film to tape 16mm & 35mm, call; Evertz UV-3 Universal Film Data Head, BO. 908-879-9590 or www.mccom.tv.

SWITCHERS

WANT TO SELL

Panasonic AV-HS450 16-input HD/SD switcher, new, call for special pricing; Panasonic AV-HS400A HD/SD switcher, B Stock, call; Snell Wilcox Magic Dave switcher, call; GVG M2100 digital master cntrl switcher, BO; GVG 3000-2 12 SDI & 20 analog in, BO; GVG 4000/3000/100CV/200/Master 21 boards & ps, Sony DVS-8000 boards; Utah 200 32x32 SDI/AES router, BO; GVG Kayak DD-1 switcher, call; Grass Valley 250 switcher, call; Grass Valley 2200 switcher, BO; Philips Venus audio & video router parts, call; Philips Venus 160x128 SDI video router, BO; Ross/Talia Kondor 96x96 SDI & AES router, call; Pesa Cougar 32x32 SDI/digital audio router, BO; Pesa Jaguar 64x64 SDI/stereo audio router, call; Pesa Ocelot 16x16 video /stereo audio w/ remote panels, $555; Pesa TDM3000 w/32 RS422 routing switcher, call; Grass Valley Kalypso auxillary panel, BO; Knox Video SDI 8x8 video switcher, call; DNF SW32-RS422 32-port switcher, BO; Ross Synergy 3 switcher, 3ME w/32 SDI inputs, call; Snell & Wilcox DVS 1000 switcher 8 SDI inputs, $800. 908-879-9590 or www.mccom.tv.

TEST EQUIPMENT

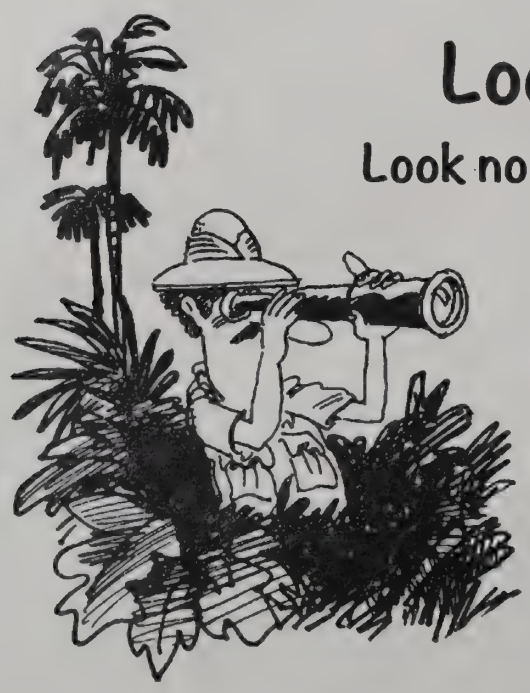
WANT TO SELL

Videotek VTM-330E SDI rastorizer, call; Tektronix 1740A combo wfm/vec, BO; Tektronix 1730/1720 wfm/fec, BO; Tektronix WFM-601A SDI Scope, $300; Tektronix 1740 combo wfm/vec, BO; Videotek VTM-190, call; Videotek TVM-675, BO; Tektronix TG700 w/AG7, DVG7, BG7, TG7 modules, call. 908-879-9590 or www.mccom.tv.

VCRS/VTRS/RECORDING MEDIA

WANT TO SELL

Panasonic AJ-HPM200 P2 B Stock, call; Sony J-30SDI, call; Panasonic AJ-HD3700B D5, call; (10) Panasonic AJ-PCD30, $1499/ea; Panasonic AG-HPD24 P2,call; (5) Panasonic MSU10-HDD w/500GB drive, B Stock, call; Panasonic AG-HPG20 P2 Reader, B Stock, call; Sony DNW-A75 Beta SX, call; Sony DNW-A65 player, call; Sony DVW-A500 & DVW-500, call; Sony BVW-D75, call; Sony DSR-1500, call; Sony BVW-75 & BVW-70's, call; Sony DVR-28, call; (7) Sony PVW-2800, call; Sony PVV-3, BO; Sony DSR-1800, BO; Sony BVW-60, BO; Panasonic AJ-HD2700, BO; JVC BR-D80U digital S, call; Panasonic AJ-D450 & AJ-D455 w/SDI, call; Panasonic AJ-D90, call; Sony BVW-65, call; Sony BVH-2000, call; (3) Sony DNW-A22, call; Sony DSR-2000, call; (2) Leitch Nexio NX4000 servers, call; Sony DSR-85, call; Orad Forum D36T DDR for parts, BO. 908-879-9590 or www.mccom.tv.



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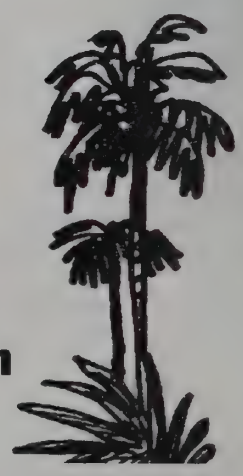

EQUIPMENT REVIEWS

BBS

CONTINUED FROM PAGE 37

With that in mind, I ran a series of simple tests with the light in fairly close quarters and at levels varying between 30 and 70 percent. I worked in a variety of situations, intermixing its output with ambient daylight illumination and placing the Area 48 between three and 21 feet from the subject.

It quickly became apparent that the Area 48 was much easier to work with than many other lights I'd used. This was partly due to its soft light, which creates less of a challenge when eliminating shadows. This meant that I could move it around fairly freely without always worrying about casting new shadows. And as it runs so cool, pushing it close to the subject wasn't a problem either. Thus, I was able to concentrate on getting the best illumination and "look" vs. dealing with all the tradeoffs involved with other lighting instruments.

In general, I found that lighting scenes in a typical home interior was much easier and faster than with an equivalent incandescent light—especially where supplying power to a lighting instrument is a concern. The maximum current drawn by the Area 48 doesn't come anywhere near to tripping breakers on a home lighting circuit and there's always the option for slapping on a 100-watt camera battery.

While a pair of Area 48's might be ideal, I was able to light most typical "tight" scenes with only one Area 48 as the fill, and a different fixture for key lighting. Although the camera I used didn't gauge and display color temperature, I can confirm that whenever I had ample light on the subject—even when it was very dark—the colors in the electronic viewfinder corresponded very closely to what I was seeing with my own eyes, thus informally confirming the fixture's published color rendering index (CRI) of 95 with the 5600K phosphor panel.

I quickly learned that a single Area 48—even when used with a "soft box" to boost its output—will not adequately illuminate a really large dark space. Nevertheless, I did manage to grab some grainy (18 dB gain) cutaways of subjects located 70 or so feet away.

Footage shot at a closer range—where there was at least some ambient lighting—had better color fidelity and contrast, especially when using a camera with an ISO less than 600.

The color in the closer shots was actually remarkable, considering how dark the scene looked.

I was able to grab enough decently lit shots in less than two hours to create an interesting montage of a nocturnal night light exhibition. The color in the closer shots was actually remarkable, considering how dark the scene looked. I was even more impressed with the absence of harsh shadows, especially on faces and with the amount of "black stretch."

And even though AC outlets were scarce and overloaded, I never had to worry about running short of juice.

SUMMARY

The Area 48 smashes two key barriers associated with most Pro LED lights—limited output and less-than-perfect color rendering quality. Working with Area 48 was much like having the lighting capacity of a very large incandescent soft light, but without the heat and power issues. It also provided amazing mobility and setup speed.

This instrument blows away all other LED lights I've worked with so far. Once I got used to its few quirks, it rewarded me with low-stress operation and provided smoothly lit video with faithful color rendering—even when it was the primary light source in otherwise very dark settings. Adding just one Area 48 to a medium-capacity LED lighting kit can quickly transform it into an all-purpose kit ready for far greater challenges than just tightly controlled daylight interviews.

Carl Mrozek operates Eagle Eye Media, and specializes in wildlife and outdoor subjects. His work regularly appears on the Discovery Channel, The Weather Channel, CBS, PBS and other networks. Contact him at eagleye11@gmail.com.

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PRODUCTS & SERVICES MARKETPLACE

STREAMING AND RECORDING APPLIANCE

Matrox's newly introduced Monarch HD streaming and recording appliance simultaneously streams HD video and records a mastering-quality version of that video for post-event editing.

It generates an H.264-compliant stream that's compliant with RTSP or RTMP protocols and works with HDMI sources. The Monarch HD records high-quality MP4 or MOV files to SD cards, USB storage devices or networked-mapped drives.

The streaming/recording device features one-touch push-button operation, along with a fanless design, low power consumption and a locking power connector for enhanced reliability.

For additional information, contact Matrox at 514-822-6000 or visit *www.matrox.com*.

COMPACT MULTIVIEWER

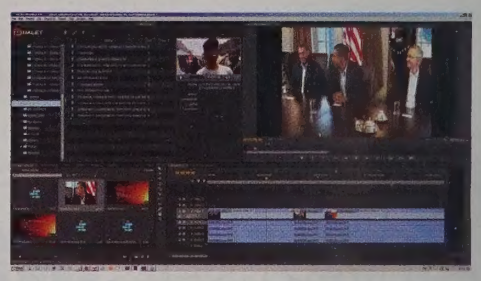
Apantac has launched a new compact universal multiviewer, the MiniDE-4 Crescent. The device is based on Apantac's Tahoma DE multiviewer platform and can display a combination of four DVI, HDMI, VGA, YPbPr, or composite video signals.

The multiviewer includes a built-in DVI/HDMI output extender that supports resolutions as high as 1920 x 1200, including 1080p. It offers a configurable layout display, and provided borders and labels that may be added to any of the four windows it produces. Several layouts may be created, stored and retrieved.

For additional information, call Apantac at 503-968-3000 or visit *www.apantac.com*.

XTEND MODULE FOR ADOBE PREMIERE PRO CC SOFTWARE

Dalet's new Xtend module for Adobe Premiere Pro allows collaboration between Adobe and Dalet users. It streamlines content production efforts by allowing Adobe Premiere Pro CC users to directly access the Dalet database for viewing available content and Dalet users can push material to Adobe Premiere Pro CC editors for finishing.



The linkage of the two systems also allows triggering of specific events and preservation of metadata for linking the editor's material to original sources. Editors may also add additional metadata and information such as usage rights and descriptive locators.

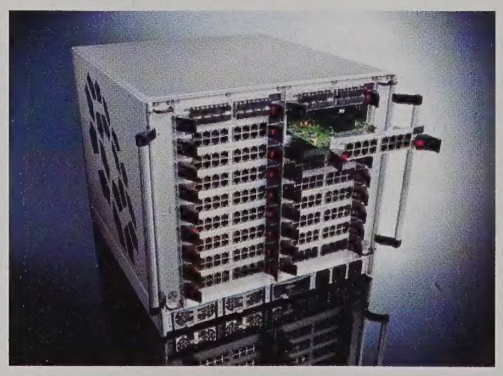
For additional information, contact Dalet Digital Media Systems at 212-269-6700 or visit *www.dalet.com*.

KVM MATRIX SWITCH

Guntermann & Drunck's new ControlCenter digital KVM matrix switch features 288 ports, allowing it to route signals between thousands of computers, keyboards, monitors and mice. It's designed for long distance interconnections and may be connected to sources and destinations via either optical fiber or CAT-type cables.

The KVM switching matrix offers single-link resolutions as great as 1920 x 1200, supports integration of VGA and DisplayPort video sources, and provides a 24-bit DVI color mode.

For additional information, visit Guntermann & Drunck at *www.gdsys.de*.



FLINT INTEGRATED PRODUCTION SYSTEM

Broadcast Pix has released V2.0 of its new Flint integrated video production system. This latest release adds an internal eight-channel audio mixer, broadcast quality internal H.264, and .WMV Web streaming, along with an enhanced multiviewer monitoring system.

The mixer addition takes audio from any camera input or internal clipstore and is controlled via an intuitive on-screen interface with on-screen level meters and faders. The internal hard drive H.264 recording feature allows the system to store 1080i H.264 .MOV clips that can be added to a show.

For additional information, contact Broadcast Pix at 978-600-1100 or visit *www.broadcastpix.com*.

M3 ROUTER-TO-MULTIVIEWER CABLE

Miranda Technologies, a Belden brand, is now supplying a new cable that's designed to simplify interconnection of routers and multiviewer systems. The M3 integration cable is rated for 3 Gbps operation and replaces 16 individual coaxes and associated connectors. It allows seamless integration of Miranda Nvision routers and the company's Kaleido-Modular-X and Kaleido-MX multiviewers.

The new cable supports the SMPTE 424M specification and allows 3 Gbps images to be transported up to twice the distances provided by conventional cables. By reducing the number of conventional cables, the new cable also allows cooler operation of equipment by removing obstacles to ventilation.

For additional information, contact Miranda at 514-333-1772 or visit *www.miranda.com*.

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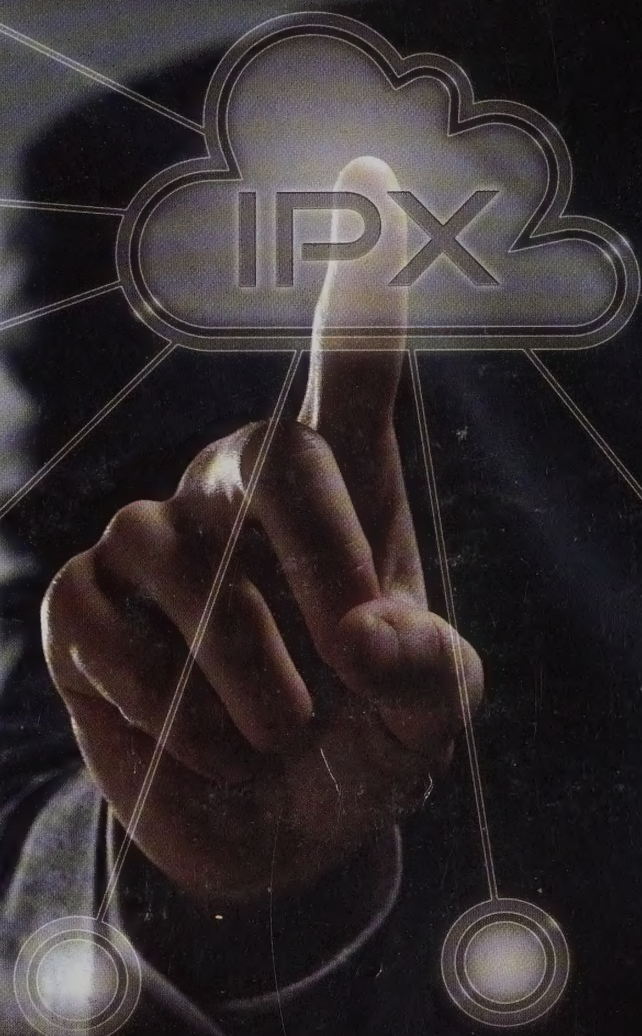

EVERTZ SOFTWARE DEFINED VIDEO NETWORK SOLUTIONS

Evertz' Software Defined Video Network (SDVN) enables broadcasters to utilize a 10GbE infrastructure and control it in a broadcast centric way.

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At the core of Evertz' SDVN is the **IPG High Density Media Gateway** and **IPX 10GbE Switch Fabric**. The **IPX** and **IPG** platforms provide broadcasters all the flexibility of a 10GbE IP network with all of the reliability and capabilities of a baseband facility. Create a reliable and deterministic broadcast facility that functions in an IP world.

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